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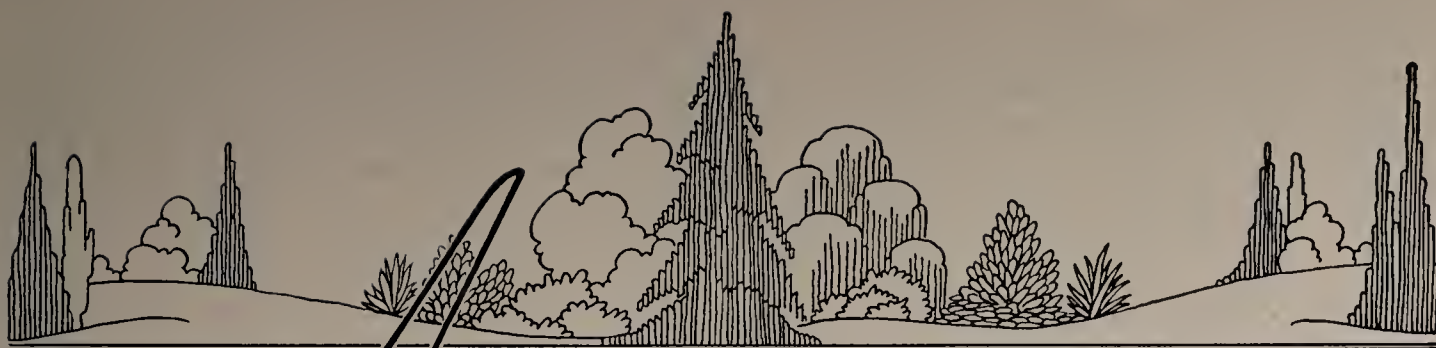


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The Arboretum Bulletin

VOLUME XV

SUMMER, 1952

NUMBER 2

Spring in the Arboretum

BRIAN O. MULLIGAN

THE flowering of plants in the Arboretum has been unusual in two ways this year. First of all it began earlier than usual, in the case of such plants as *Rhododendron mucronulatum*, *praeevernum* and *sutchuenense*, *Prunus subhirtella* forms and *P. Blireiana*, *Camellia saluenensis* "Apple Blossom," and *Pieris japonica*, among others. *Camellia reticulata* (Capt. Rawes form) flowered outdoors for the first time in early April, and *Rhododendron arboreum* for the first time since 1949.

Secondly, many groups of trees and shrubs, especially *Pieris*, camellias, most rhododendrons, Japanese cherries, magnolias, native dogwood trees, peonies, and crab apples have bloomed more heavily and abundantly than normal. This probably can be ascribed to the prolonged warm summer of 1951, but in any event it has made the Arboretum exceptionally attractive for a long period this spring and visitors have been numerous and appreciative.

A major improvement effected during March and April has been the preparation and planting of the new beds, designed by Mr. R. J. Hansen, Assistant Director, in the area adjacent to the Administration buildings and clubhouse. Prior to this the old fence and row of false cypress trees between the Upper Road and this area was taken out, some of these trees being utilized as a background in the new scheme. A system of drains where necessary, and of water pipes for sprinkling in

summer was laid down, and a new drinking fountain placed near the rest rooms. Many loads of compost and other material were brought in to build up the beds, which were edged by sections of old light-poles and planted in late April with a variety of principally evergreen shrubs, planned to be attractive throughout most of the year. A few deciduous trees, including crab apples, a maple, birches and a Snowdrop tree (*Halesia*) were added for shade or effect.

A small extension to the asphalt paving was made to accommodate three or four more parked cars and a new pathway formed; the expense of this work (\$128.75) was borne by funds from the Arboretum Units, the same sources also contributing \$150 to cover part of the planting costs. The final result is already most pleasing both to staff and visitors, and will become more so as the plants increase in size.

The new beds for the *Ribes* family—which includes the currants, gooseberries and related shrubs—were finally completed in February and March, adjoining the *Philadelphus* and *Deutzia* borders made and partially planted a year or so previously on the east side of the Upper Road; 22 kinds of *Ribes* were planted early in April, totalling 69 plants. A small extension was made to the cultivated area under the native trees west of the magnolias chiefly for additions to our growing collection of these interesting and often lovely plants,

as well as for some of the newer azaleas.

Four large native poplar trees 80-90 feet high by the Madison Street entrance were taken down to avoid any possible damage in future to neighboring property. The annual program of mulching with leaves or wood shavings and applying a nitrogenous fertilizer in spring has been continued, covering the rhododendron, camellia, holly, cistus, rose and other lesser plantings. Two tons of gypsum was spread on certain of the grass areas on wet sites with clay soil, and about three tons of sulphate of ammonia on the remainder, including Azalea Way, Foster's Island, and along the Upper Road. The roses and crab apples were sprayed with a dormant oil in late February for scale; most of the spruces for aphids in late April, while a severe attack of tent caterpillars was well-controlled by two sprayings in early and mid-May, with a combination of DDT and lead arsenate. With the steady increase both in the areas under cultivation and the number and variety of plants being grown our expenditures on these necessary supplies and materials is also rising perceptibly; in the year April 1951 to May 1952, fertilizers, lime, and humus cost us almost \$800, and for insecticides, fungicides and weed-killers the figure was \$275.

The three ponds in the Arboretum were dredged and cleaned for us during May with appropriate equipment from the Buildings and Grounds department of the University; the material obtained will be used to fill low areas beside the Boulevard at Boyer Avenue.

Plantings

In the Administration area rhododendron hybrids now make a background against the buildings while groups of mountain laurel (*Kalmia latifolia*), *Pieris floribunda*, a number of *Cotoneaster* species, various Azaleas, *Berberis*, *Pernettya*, and the prostrate *Ceanothus gloriosus* form the major part of the other plantings. A bed of prostrate Junipers fills the space by the main entrance. Near the bridge over the Boulevard at E. Lynn Street eight species of *Euonymus* (23 plants) were placed in late March, to provide colorful fruit in autumn, and towards the south end of the

Boulevard ten species of Maples (21 plants) were added to the previous small collection of these ornamental trees. On the east side of Azalea Way below the look-out three more varieties of Japanese cherries (three trees of each), donated by Seattle Garden Club, should add to our future spring displays. Another 31 plants of *Philadelphus*, representing 16 species or varieties, have been placed in the collection, while the Magnolias have increased by 16 plants of nine kinds. Among miscellaneous trees and shrubs set out in various places have been several plants each of the Californian *Lyonothamnus floribunda*, the Catalina Ironwood, of *Carpenteria californica*, an attractive evergreen shrub related to the mock-oranges, two Dogwoods from N. Mexico—*Cornus florida* var. *Urbiniana* and *C. disciflora*, and one from the Himalaya, *C. capitata*, with half a dozen of the beautiful New Zealand Lacebark, *Hoheria glabrata*, on the south bank of Rhododendron Glen.

*Acquisitions**

(a) *Seeds*

As usual at this season many packets have been received from all parts of the world, including botanic gardens or arboreta at Ottawa, New York, Dublin, Oxford, Kew, Wageningen (Holland), Palermo (Italy), Kornik (Poland), Arboretum des Barres (France), Istanbul (Turkey), Gisborne (New Zealand), Canberra (Australia), and a particularly outstanding collection of twelve species of Japanese conifers from the Ministry of Agriculture and Forests in Tokyo, of which some spruce seeds have already germinated. Seeds of the rare *Tetracentron* tree, of China, were also received from an English garden.

(b) *Plants*

Among those purchased have been six varieties of crab apples (three plants of each), four *Arctostaphylos* and four *Ceanothus*, fifty heathers (*E. carnea* "Ruby Glow") donated by Mercer Island Club, a specimen *Rhododendron Loderi* var. "Pink Diamond" given by Unit No. 37, and the weeping and purple-leaved forms of the European beech tree.

As gifts we have received plants of crab apples (three kinds), birches, maples, etc.,

from the Spokane Parks Department; 31 further varieties of Glenn Dale hybrid Azaleas (two plants of each) from the U. S. D. A., Beltsville, Maryland; six varieties of Camellias from Mr. J. Buzard of Hunt's Point, Washington; Camellias and seven other kinds of shrubs from Malmo Nurseries, Seattle, and a miscellaneous collection of 26 species from the Arnold Arboretum at Boston, Massachusetts.

(c) *Books*

The most outstanding recent acquisition has been the five volumes of Mary V. Walcott's "Wild Flowers of North America," published in 1925 by the Smithsonian Institution, containing 400 charming and exquisite plates of native plants of all kinds. This magnificent donation came from the Seattle Garden Club. Mr. Ceibert Baillargeon again provided \$100 to continue our purchases of Edward's "Botanical Register," and with a further gift of \$75 from the Else Frye Unit we were able to buy the three volumes of Paxton's "Flower Garden," (1882-84), Evergreen Unit No. 17 donated Donald Wyman's new book, "Trees for American Gardens."

(d) *Other Donations*

From West Seattle Garden Club, \$500 to continue work on Woodland Garden, a most generous and welcome sum to allow of continued maintenance work through the summer. The Amateur Gardeners sent a check for \$100 to promote the Camellia garden, which they have now sponsored for a number of years, and Mercer Island Garden Club \$50 for the Winter Garden. From the proceeds of the plant sale held last October by the energetic and resourceful Arboretum Units we ordered and have lately received a new Addressograph-Multigraph Graphotype machine for embossing zinc plates for plant labels. In future these will be used to hang on plants throughout the Arboretum, and as three lines of type can be printed on each it will be possible to get more information on them than our former strip labels. The Owens-Corning Fiberglass Corp. has supplied six boxes of fiberglass for trial as a mulching material.

Staff

Mr. Jonas Martin, employed since May 1944, retired owing to age at the end of March, but is being retained on a part-time basis by the Arboretum Foundation, to our mutual benefit.

The Director, elected President of the American Association of Botanic Gardens and Arboretums in January, attended the Western Chapter meeting of the National Shade Tree Conference at Pasadena in mid-May, and visited six arboreta or botanic gardens in California at that time, principally in the Los Angeles area, including the Huntington, Los Angeles State and County, and Rancho Santa Ana at Claremont.

A general increase of about 5 per cent was made to salaries and wages of the staff as from April 1, in order to bring the Arboretum more nearly into line with comparable positions in city employment.

Lectures, Tours and Publications

In the three months of March, April and May, 16 lectures illustrated by Kodachrome slides of the Arboretum and its plants have been given to garden clubs and a few other groups. Included in these were visits to Tacoma (twice) and to Spokane, the latter being the first occasion in that city. In this period the slide collection has increased by 55, and 69 new prints have been added to the black and white photographs.

Thirty-three conducted tours of the Arboretum have been made during the same period, the month of May being the most popular for club visits. However, both April and June are also attractive months here and more groups are visiting us at those times.

Our policy in future, owing to the small staff available for this work, will be to give lectures only from September through March, and conducted tours (when requested) during the spring and summer months. Without such a limitation on our time it is most difficult to deal adequately with other regular work both in the office and the Arboretum.

One thousand copies of an up-to-date map of the Arboretum, drawn by Mr. R. J. Hansen and measuring 17 by 9¾ inches, have been

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London's Chelsea Physic Garden

FREDERICK G. MEYER*

THE modern botanical garden, it is reasonable to believe, developed in close association with "simples" and their cultivation in limited areas—first, in all likelihood during the middle ages around monasteries and later in Renaissance "physic" gardens. In England, the monastery gardens have long since been untended; however, remnants of these gardens reputedly still exist. Among the monasteries I have seen, it is usual to find growing over the ruins and in the nearby fields a variety of curious "old-fashioned" garden plants which may represent the progeny of those cultivated centuries ago in the adjoining gardens of the monks. It is of interest that the Belladonna (*Atropa Belladonna*), long known for Atropine, occurs almost wholly in England around the ruins of these ancient monasteries.

With the decline of the clerical orders, the rising medical schools in the leading European universities of the 16th century soon established special gardens for growing "simples." In almost every European country there still exists one of these old Renaissance "physic" gardens, although many have long since been incorporated into larger modern gardens and have, for the most part, lost much of the significance for which they were originally intended. Several of these gardens were in operation as early as 1550, especially in Italy. In Great Britain two such physic gardens still exist on their original sites—the Oxford Botanic Garden and the Chelsea Physic Garden.

From late in 1949 and through the whole of 1950, during the fifteen months while I was in London doing work for the Missouri Botanical Garden, St. Louis, it was my privilege to live at the Chelsea Physic Garden. While I reveled the whole time in my good fortune of actually living at this time-honored and historic garden, I was a little distressed to

learn from various Londoners their general ignorance of the existence of this famous garden. But it is true that many facets of London life must be "discovered" and then studied to be appreciated.

The Chelsea Physic Garden was established in 1673 by the Society of Apothecaries (physician-pharmacists) and it still remains the second oldest existing botanic garden in Great Britain. The Oxford Botanic Garden, established in 1621, is the oldest. London had known older gardens than the one in Chelsea, but none of these exist today. John Gerard(e) wrote his well-known "Herbal," first published in 1597, and a list of the plants he grew was published during this period. John Tradescant, gardener to King Charles I, established a garden about 1630 in the south Lambeth area of London for the purpose of cultivating exotic plants. Tradescant's name has been perpetuated for the Spiderworts (*Tradescantia*), native American plants and now common in gardens.

The Apothecaries Society originally had been a part of the great Grocers company, although this arrangement never suited the Apothecaries whose prime concern was to uphold sterling medical standards. The Grocers understandably could not appreciate this matter with facility. Thus the Apothecaries broke away from the Grocers company as a separate society in 1617 under a charter which read, in part, "whereas very many Empiricks and unskillful and ignorant men do abide in our City of London which are not well instructed in the Art of Mystery of Apothecaries, but do make and compound many unwholesome, hurtful, deceitful, corrupt and dangerous medicines and same do sell, etc." Thus, under the domain of the Apothecaries, the practices of ethical medicine became more firmly established. The Great Plague, Civil War and the London Fire were periods of the 17th century when the services of the Apothecaries were in

*Dr. Frederick G. Meyer is dendrologist of the Missouri Botanical Garden, St. Louis, Mo., in the interests of which he visited London and the historic garden of which he writes.

great demand. The "herborizing" or barge excursions to the fields adjoining the River Thames had been a practice of long standing with the Apothecaries in their search for drug plants, but these excursions did not always produce the most useful plants. So the Apothecaries sought for a plot of land where their plants and seeds could be cultivated close at hand—especially those from America and the Orient. A garden site was located—a small plot of three and a half acres—in the pleasant riverside manor of Chelsea, made famous in earlier times of Henry VIII by Sir Thomas More, intellectual leader, owner of much of Chelsea and friend of Erasmus and Holbein. The site bordered on the River Thames and was obtained through a lease from Lord Cheyne, according to a document dated August 29, 1673, which "did demise and grant unto the Master, Wardens and the Society of the Art and Mystery of Apothecaries of the City of London, the piece and parcel of ground and premises therein mentioned, to hold from Michaelmas (September 29) then next ensuing unto the full end and term of sixty-one years, at the yearly rent of five pounds." The next year, 1674, it was proposed and accepted to construct a wall around the garden and a sum of 50 pounds was raised for this purpose. This brick wall, with some additions, today surrounds the garden on three sides after 278 years.

The first gardener was a man named Piggot, employed in 1677, but he soon left. Richard Pratt, the next gardener, was allowed lodging and a salary of 30 pounds per annum (about \$150) which in those days was a very tidy sum. The fame of the garden rapidly spread to the Continent and in 1682 Dr. Hermann, professor of botany at the University of Leyden, visited the Chelsea Physic Garden. Dr. Hermann had led an earlier expedition to Ceylon in 1672-77 and his valuable collection of plants was used by Linnaeus as a basis for the "Flora Zeylanica" published in 1747. Hermann's collection with numerous annotations in the hand of Linnaeus is now one of the prized possessions of the British Museum of Natural History in London.

In about 1683, four cedars of Lebanon (*Cedrus Libani*), the first of their kind to be grown in England, were received at the Chelsea Physic Garden from Holland. The last of these venerable trees died 218 years later in 1901, and from it was built a small folding table which is kept in the present laboratory building. The Lebanon cedar is much seen today in southern England where it is among the most noble of cultivated conifers.

The rule of the Chelsea Physic Garden as a leading institution of its kind was soon established. It was this garden, for instance, that first cultivated in England the much-sought-after Jesuit's bark—the quinine of today. And it was this garden that introduced the practice of heating greenhouses from subterranean "stoves." A very warm greenhouse for tropical plants may still be referred to as a "stove house" with its included "stove plants," especially in England. In this relation, the following entry from the diary of John Evelyn is of interest:

"August 7, 1685, I went to see Mr. Watts, keeper of the Apothecaries' Garden of simples at Chelsea, where there is a collection of innumerable rarities of that sort; particularly, which had done such wonders in Quartan Agues (Malaria)—what was very ingenious was the subterranean heat, conveyed by a stove under the conservatory, all vaulted with birk, so as he (John Watts) 'has the doors and windows open in the hardest frosts, secluding only the snow.'"

A most happy and fortuitous circumstance occurred in 1712 as regards the history of the Chelsea Physic Garden. The Manor of Chelsea was purchased by Sir Hans Sloane. Sloane's interest in the Physic Garden existed from his youth when he had often visited the garden. This act on the part of Sir Hans Sloane probably was the most important event in the long history of the Chelsea Physic Garden and, in view of the rather precarious financial status of the garden since its inception, the need of a live donor could not have been more timely or keenly felt than now. In February, 1722, a deed was signed by which Sir Hans Sloane did "grant, release and confirm unto the said

Master, Wardens and Society, and their successors, all that piece or parcel of arable and pasture ground, situated at Chelsea, in the County of Middlesex, at that time in their possession, containing three acres, one rood, and thirty-five perches, with the greenhouse, stoves, barge-houses and other erections thereon, the yearly rent of five pounds” and in perpetuity as a “physick garden.” Sir Hans Sloane stipulated further that every year for forty years, fifty specimens of plants (all grown in the garden, and no two alike), carefully dried, mounted and named, should be sent to the Royal Society. This stipulation meant that countless new plants were brought into the garden, many from foreign countries. Actually, more than three thousand specimens were prepared and these have been faithfully kept throughout the years and now form an important historical collection of the garden plants of the 18th century. Sir Hans Sloane became court physician to George II, president

of the Royal Society, succeeding Sir Isaac Newton, and president of the College of Physicians. In 1753, Sloane’s vast library and natural history collections were purchased by the British government for 20,000 pounds, and, with this as a basis, the world-famous British Museum was founded.

With Sir Hans Sloane came an era of great prosperity and consequent prestige to the Apothecaries Garden. Through the insight of Sloane, Phillip Miller was brought to the garden in 1722 as chief gardener where he remained for the next 48 years. Miller’s prodigious energies were apparent when, after only two years at the garden, he published the *Gardener’s Dictionary* in 1724. This valuable addition to garden literature soon became a best seller among gardening books of the period and passed through eight editions dur-

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(Below)

Chelsea Physic Garden, with beds laid out under system of Bentham and Hooker.



Dr. David Lyall, Botanist of the International Boundary Survey

GLADYS BOUGHTON*

IT WAS owing to the good offices of Sir William Hooker, Director of the Royal Gardens at Kew, that a record has come down to us of the plants seen for the first time in areas penetrated by the International Boundary Commission of 1858. To Hooker, and to the skillful collecting and careful description of Dr. David Lyall, we owe a record of botanical exploration which expanded substantially the existing knowledge of Northwest flora.

Hooker had completed his magnificent "Flora Borealis Americana", based principally on the collections of Richardson, Drummond and Douglas, nearly twenty years before, when in the appointment of the Commission to survey the boundary between United States and British territory, he saw an opportunity to increase his knowledge of the plants of North America and to augment his herbarium, already one of the richest in the world. He brought powerful persuasion to bear on His Majesty's government with the result that a botanist was attached to the Commissioner's party. Dr. Forbes started with the surveying ship in this capacity but was replaced, when the ship put in at Valparaiso, by David Lyall.

A man of many talents, Dr. Lyall was the official ship's doctor and botanical reporter for the Commission. His account of the expedition is brief, but one of the most interesting written by any of the botanists to explore the Northwest. He collected extensively and has been highly praised for the great care with which he preserved his specimens, the minute localization of each, and the exactness of his descriptions. Not only was he skilled as a physician, scientist and writer, but he possessed considerable ability as an artist. His sketches of the terrain encountered and the activities of the surveying party enhance the

reader's feeling for the dangers and difficulties of the expedition and the grandeur of the country.

He had an opportunity to examine and describe plant life in many forms during his four summers in the Northwest. His first summer, that of 1858, was spent partly on board ship at the southeast corner of Vancouver Island and among the islands in the Gulf of Georgia, partly on shore and in the Fraser River valley, never much more than twenty miles from the sea. It was during this time that he made his extensive collection of algae. The summer of 1859 was spent on the western slope of the Cascade Mountains close to the 49th parallel. In May, 1860, the Columbia was entered and collections made on each side of the river, from The Dalles up to the 49th parallel and from the summits of the Cascade Mountains as far east as Colville. In 1861 his party pushed to the eastward as far as the watershed of the Rocky Mountains, paying a hurried visit to the plains at the eastern base of the mountains. He has left a delightful account of the general character and botanical aspects of the regions traversed, with lists of the characteristic plants of the various regions.

The International Boundary Survey was undertaken jointly by the United States and Great Britain. Also attached to the American party were specialists who prepared reports on natural history and botany. But when the survey was finished, the United States was engaged in the Civil War and so heavily in debt that government authorities considered the boundary materials too expensive for publication at the time. Search for them since has been unavailing. The manuscript of the Northwestern Boundary Final Report is said to have been seen in the Survey office as late as 1873, but it was not found among the materials transmitted to the State Department at the close of the Survey office. Although a large sum of money was spent on the original sur-

*The next to last in our series of Early Explorers of the Pacific Northwest, from the very capable pen of Miss Gladys Boughton, acting director and assistant professor of the School of Librarianship, University of Washington.

vey, the boundary was re-surveyed for purposes of certainty in 1900 and the publication of the survey of a half-century earlier was rendered unnecessary.

The life and work of John Torrey are usually considered as epitomizing the history of botanical exploration in North America during the nineteenth century, but he does not figure in the work of this Commission. Official treasury records show that Torrey was paid \$100 for his taxonomic work on the plants collected by the Commission, but his report on the botany of the survey was doubtless among those not located.

Settlement of the line of boundary between United States and British territory came only after the dispute had assumed the proportions of a political crisis. Then it was several years after the signing of the treaty declaring the line of demarkation to be the 49th parallel before commissions were appointed to settle the line of boundary at the seacoast and determine its course across the continent. Commissions were appointed by the two governments at about the same time, but the Americans, arriving in the vicinity of the boundary in June, 1857, had to wait a year before they were joined by the British. The delay was caused by the necessity for reconditioning the ship *Plumper*, which was to bring Dr. Lyall as ship's doctor.

H.M.S. Plumper was of a design nearly out-of-date, and had just returned from a long cruise on the West Coast of Africa, when she was selected and commissioned by the British government for the Boundary Survey. When she came to be overhauled, she was found to be "rotten in many parts". Extensive repairs were necessary before she could start so long a voyage. She was a steamship of 60 horsepower which could make, at best, an average speed of six knots per hour, by no means adequate to currents encountered in waters between Vancouver Island and the mainland of North America. During her passage over she met with such accidents as a leaking hull and broken screw-shaft, and she suffered further delays because of her inadequacy to combat bad weather. While in the Northwest she met

with many mishaps. Once while attempting to put into Nanaimo for coal, she missed her port and was caught in a storm of wind and snow of great violence. Fortunately her captain had long experience as a surveyor and arctic explorer, and was able to bring her safely through her many misadventures.

The first duty of the *Plumper* on reaching these waters was the determination of the exact spot where the 49th parallel met the sea. This was necessary as a starting point for the Commission which was to carry the line across the continent. The Americans were carrying on reconnaissance when the British arrived. When the exact spot was marked, it was found to be only eight feet from that fixed by the American Commissioners.

It was impossible to mark the whole boundary of approximately 409 miles from the Gulf to the Rockies through dense forest and over almost inaccessible mountains. Points on the line were determined and marked by a cleared strip twenty feet wide and a half mile long. Parties returning to these strips a year later were astonished to find them completely filled with dense growth. They were able to distinguish the strips only by the absence of tall trees. Monuments marking stations were pyramidal piles of stones or earthen mounds covering wooden posts.

Dr. Lyall describes the unbroken forest from the Gulf of Georgia to Similkameen Valley. He recognizes the floristic unit on the west side of the Cascade Range and notices the marked difference in general aspect in regions to the east. For purposes of botanical comparison he divides the country traversed into three principal regions: first, the lower Fraser River district, which includes the Summass and Chilukeweyuk prairies and other low grounds to the westward of the Cascade Mountains—a moist region; second, the Columbia valley between The Dalles and Colville—a dry country, and for the most part destitute of trees; third, the higher regions of the Cascades and Rocky Mountains.

Dried plants were transmitted from time to time, as they were collected and preserved, to

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ARBORETUM SPOTLIGHT

Penthouse Guests

IN MANY WAYS the Arboretum is very much like a huge hotel providing rooms and suites for its many plant guests. One can readily understand that each family has its own preferences as to exposure and situation so, of course, we try to accommodate its needs.

One of the family groups preferring the abundant sun and heat of the hotel penthouse is the Rock Rose family, known as *Cistus*. One might guess that they hail from the sunny Mediterranean region, namely the countries of Portugal and Spain. Along the Upper Road in the Arboretum north of Rhododendron Glen is just such an open spot; sunny and hot, dry and well drained, ideally suited for these plants.

Of the many *Cistus* for the garden there is

one of particular charm, a hybrid named Doris Hibberson which originated in Victoria, B. C., Canada. It has large, single, rose-pink flowers and to many these resemble a wild rose. Each bloom lasts only one day, but the succession of abundant buds insures a continuous display. The flowering period starts after mid-June and continues well into July. The shrubs average thirty inches in height, slightly less in spread.

Doris Hibberson is unusually hardy. When temperatures dropped to 3 degrees above zero in January-February, 1950, this was the only *Cistus* which survived unharmed.

1 1 1

(Below)

Cistus Doris Hibberson

—PHOTO BY E. F. MARTEN



Hydrangeas *

HYDRANGEAS rank high among the summer flowering shrubs, coming as they do into full glory when most needed in the summer borders. The early blooming trees and shrubs have long since come and gone, as have the Azaleas, Rhododendrons and the later flowering trees and shrubs. Even the roses have passed their first burst of splendor and only the annuals are left to carry on.

Now come the Hydrangeas, some beginning to bloom as early as June, others in July, August and September. The spent flower-heads, often turning beautiful shades of green and rose, are to be found on certain types well into the winter. The flowers have a wide color range, white to creamy white, tinged pink or green, all imaginable shades of blue, red or reddish purple. The foliage is usually of a beautiful vivid green and in most species of admirable texture.

The color of the flowers may be changed or modified by the application of certain chemicals or fertilizers and with some species by the relative amount of sunshine they receive. The flowers are of two distinct forms, the ball-shaped or globose, varying from the round balls of *H. arborescens* to the pyramids of *H. paniculata*, while the lace-caps have a flat head or corymb, the center of which is made up of small fertile flowers surrounded by a ring of large sterile ray flowers, sometimes white, more often colored, as in *H. strigosa* in which they are lavender blue or purplish. These sterile flowers have no stamens or seed-bearing parts, consisting merely of three to six flat spreading sepals, sometimes with small remnants of petals in the center.

The flowers of these lace-caps, while not so striking as the large ball-shaped varieties, are more airy and graceful; this is the form most often found in the wild. It lends itself most admirably to the border and when planted with Rhododendrons or other broad-leaved evergreens, whose soil and other needs are

similar, they give lightness often wanted in plantings of this sort. The globose form of flower arrangement is found in certain members of the Viburnum family, e.g. *Viburnum Opulus*.

Hydrangeas belong to the *Saxifragaceae*, which includes *Ribes*, *Philadelphus*, *Deutzia*, *Escallonia* and other well-known plants. The word is of Greek origin, hydor meaning water and angeion, a vessel, alluding to the shape of the seed capsule. The number of species in cultivation is given as thirty-five. However, there are many others that are either too tender or are not suitable for ornamental purposes, coming mostly from tropical regions. Of the Hydrangeas that are cultivated in temperate regions it is interesting to note that they originate in two widely separated areas, where Magnolias also are found, in the southeastern United States and the greater number from eastern Asia. Here they range from Japan south and westward across China to the Himalaya.

Hydrangeas are hardy or half-hardy shrubs, nearly all deciduous; a few of the half-hardy are evergreen. The family includes both climbers and shrubs, sometimes assuming tree forms. The leaves are opposite and usually obovate in form with serrate edges.

There are three climbing species in cultivation, two of which, *H. petiolaris* (Siebold) and *H. anomala* (Don) are deciduous, and one from Chile evergreen, *H. integrissima* (Hooker). *H. petiolaris* is a vigorous climber from Japan, attaching itself by means of aerial roots to trunks and branches of trees, buildings or walls. The leaves are ovate in form with serrated edges, of a glossy green, two to four inches in length. It flowers in June and July and has spreading corymbs six to ten inches across, with some sterile white ray flowers around the margins. The small fertile flowers are creamy white. It is a beautiful plant and worthy of more attention by gardeners. Mr. E. H. Wilson in *Aristocrats of the Garden* says, "This climber is abundant in

*We are pleased to offer this article on Hydrangeas compiled by Mrs. Edw. M. Hay, member of the Lake Washington Garden Club, with the assistance of the Bulletin Editorial Board.

the moist forests of Japan and was introduced into the Arnold Arboretum in 1876. I have seen in the forests of northern Japan and in Hok-kaido trees seventy to eighty feet tall, covered with masses of flowers of this *Hydrangea* and a most fascinating picture they presented."

H. anomala is a related climbing species from the Himalaya, introduced something over one hundred years ago and somewhat less hardy. It was reintroduced by E. H. Wilson in 1901 from West Hupeh, China, in a better form than the older one. It is said to be fragrant.

H. integerrima is the third of the climbing species. It is of interest as the only cultivated evergreen *Hydrangea* coming from south of the equator. It grows up tall trees, clinging by means of aerial roots; it has thick, leathery, dark green elliptic pointed leaves, two to six inches long and half as wide. The basal leaves are heart-shaped and entire. The white flowers are in corymbs. This belongs to the *Cornidia* section, which includes seventy or more species found in Mexico, South America, the Philippines and Formosa. They are evergreens, mostly climbers found in temperate zones of high humidity. Garden enthusiasts might find it interesting to try some of these types in the Pacific Northwest. Of the section *Euhydrangea*, the four American species are *H. quercifolia* (Bart.), the oak-leaved *Hydrangea*; *H. arborescens* (Linn.), the smooth-leaved; *H. radiata* (Walter) the silver-leaved, and *H. cinerea* (Small), intermediate between the two latter.

H. quercifolia is the most interesting and individual of the four; so called because the leaves resemble those of the scarlet oak. This plant is first mentioned by Wm. Bartram, son of that early Pennsylvania plant hunter, John Bartram. William made an exploring trip to Florida, the western parts of the Carolinas and Georgia in the spring and summer of 1773. A record of this trip is found in *The Travels of Wm. Bartram*. He first found *H. quercifolia* not far from one of the main branches of the Altamaha River. On page 308 we find:

"I observed here a very singular and beautiful shrub, which I suppose is a species of *Hydrangea* (*H. quercifolia*). It grows in coppices or clumps near or on the banks of rivers and creeks; many stems usually arise from the root, spreading itself greatly on all sides by suckers or offsets; the stems grow five or six feet high . . . and are covered with several barks or rinds." Its habitat extends along the coastal region from Maryland and Delaware through the Carolinas, Georgia and Florida westward to Mississippi.

The leaves are downy white underneath, with three to seven lobes; the flower heads or panicles are four to ten inches in length, with numerous white sterile flowers that eventually turn purplish. Flowering time is from July into late summer. *H. quercifolia* is said to be one of the finest of native American shrubs. A specimen is to be seen in the Arboretum.

H. arborescens is a native of the eastern United States from New York southward, west to Missouri. It is very hardy, and there are several improved varieties of which *H. arborescens grandiflora* is the best. The flower heads, when well-grown, sometimes reach a width of six to seven inches and are rounded balls of pure white sterile flowers. The leaves are acuminate in shape with serrate edges, of an attractive green.

The variety *grandiflora*, called "Hills of Snow," is a very beautiful form; all the flowers are of the large sterile type, pure white, that turn greenish in late summer. In cold districts it is the practice to cut all shoots to the ground each spring.

It was first sent to England to Peter Collinson, probably by his friend John Bartram, and bloomed in his garden at Mill Hill near London in 1746. It was first found growing wild in the mountains of Pennsylvania.

Two other American species closely related to *H. arborescens* are *H. radiata* and *H. cinerea*. They differ chiefly in their leaves, which in *H. arborescens* are glabrous or nearly so beneath; in *H. radiata* they are covered beneath by conspicuous white down, and in *H. cinerea* with an ashy gray down. *H. radiata* grows at least five feet high and has sterile

flowers on the margins of the trusses. It blooms in July.

H. cinerea, similar in size, is the connecting link between the other two, not only in leaf character but in the number of its sterile flowers. In its variety *H. c. sterilis*, the trusses are entirely of sterile flowers and it is thus a better garden shrub than the species.

Asiatic Species

Three of the hardy Asiatic species are *H. paniculata* (Siebold), *H. Bretschneideri* (Dip-pel) and *H. xanthoneura* (Diels).

H. paniculata, on account of its hardiness, is considered a very satisfactory late summer and fall blooming shrub. It comes from Japan, where it sometimes assumes tree-like forms 25-30 feet in height. The flower heads are large pyramidal panicles varying in size according to the vigor of the plant. The only other *Hydrangea* having similar shaped flower heads is *H. quercifolia*, whose leaves, however, are very different. Those of *H. paniculata* are from three to six inches long and occur in

pairs. The sterile flowers are creamy white with four entire sepals, which assume a pinkish tinge with age. There are three varieties of *H. paniculata*: *grandiflora*, *floribunda*, and a form found in America, var. *praecox*.

H. p. grandiflora is the well known p. g. of commerce. The large heads are composed almost, if not entirely, of sterile flowers that come into bloom in late summer. The inflorescence of *H. p. floribunda* consists of both fertile and sterile flowers, the latter being creamy white with a red eye. It is more decorative than *grandiflora* and would add grace to the late-blooming border. Var. *praecox* blooms earlier than the type, early in July. It has a shorter and smaller panicle with smaller flowers. Other varieties bloom later from July to October.

(Continued on Page Thirty-four)

1 1 1

(Below)

Oak-leaved *Hydrangea* (*H. quercifolia*) at head of Glen in Arboretum.

—PHOTO BY E. F. MARTEN



Hydrangeas in the Arboretum

ALTHOUGH in 1951 a general plan for the Saxifragaceae area included a section devoted to the Hydrangeas, we have not been able to establish the planting this year. However, when completed this collection will contain the major *Hydrangea* species, about fifteen in number, plus twenty-five horticultural varieties of the well-known *Hydrangea macrophylla*.

Already established at the head of Rhododendron Glen are several groupings of *Hydrangea* species including the Oak-leaved *Hydrangea*, *H. quercifolia*; *H. cinerea*, *H. Bretschneideri*, *H. paniculata* and some horticultural varieties of *H. macrophylla*, with a notable specimen of the handsome *H. strigosa* var. *macrophylla*, native of Central China.

Hydrangea Sargentiana

H. ARMYTAGE MOORE
County Down, North Ireland

THE specimen in question has flourished here for more than thirty years and has always shown itself as a healthy, free-flowering specimen flourishing in some degree of shade and shelter in damp, lime-free soil. We have even found self-sown seedlings in the neighboring brick wall. I cannot at the moment trace the source from which I received it, but it might well be J. H. Veitch & Son.

The measurements are as follows:

Central growths, 12 feet high.

Width at ground level, 21 feet.

1 1 1

(Below)

Hydrangea Sargentiana at Rowallene, Co. Down,
North Ireland, August, 1950

—PHOTO BY B. O. MULLIGAN



The Pacific Dogwood

MRS. NEIL MACNEIL*

IN THE month of May a million white stars suddenly sparkle forth high overhead in the dark coniferous forests of the Pacific Northwest. It is one of nature's most spectacular shows—the flowering of *Cornus Nuttallii*, the noble dogwood of the Pacific Coast; a sight that once seen is never forgotten, a nostalgic reminder of home in the mind's eye of every Northwesterner, wherever he may roam.

To many, this magnificent tree, buried under its white mantle of bloom in the spring and seared with a "crimson flame" in autumn, might well be mistaken for the so-called flowering dogwood of the Atlantic states. Indeed, the famous Douglas himself, viewing it first in the Columbia River basin in 1825, considered it a form of the eastern dogwood and made no effort to introduce it in England, where the Atlantic species was already known.

It was not until 1835 that the famed naturalist Thomas Nuttall, on an overland expe-

dition to Oregon, sent specimens of the tree along with the band-tailed pigeons who were waxing fat on its berries, to his friend the famous Audubon. The great naturalist realized at once that a new species had been discovered.

"It is a superb species of dogwood, discovered by our learned friend Thomas Nuttall, Esq., when on his march towards the shores of the Pacific Ocean," Audubon wrote. "I have graced it with his name . . . *Cornus Nuttallii*."

Growing along the coast well into certain parts of the southern California mountains, the Pacific dogwood reaches its best development in the coniferous forests of Oregon, Washington and British Columbia. It reaches a height of fifty feet and an age of perhaps a century and a half.

Although both Atlantic and Pacific dogwoods have large, showy, petal-like floral bracts, the western variety has a more perfect outline and boasts a larger size. A dark scallop taken out of the apex mars the eastern flower.

To a strange "accident of genius" may be attributed the fact that a man born halfway around the world in a quiet Yorkshire village found his way to the Pacific slope of the New World to lend his name to one of its grandest creations. Although Thomas Nuttall's fame is well established as one of the great characters in the pioneer annals of western botany, his name is securely preserved in the magnificent tree which bears it, *Cornus Nuttallii*.

*Mrs. Neil T. MacNeil has been an active member of the Arboretum Foundation since 1941 and is a member of the "Robertson Arboretum Unit."



←
One of the best forms of Western Dogwood in the Arboretum.

—PHOTO BY E. F. MARTEN

Rosa Rugosa, Its Varieties and Hybrids

G. S. THOMAS*

IT WOULD be hard to find a more accommodating shrub than *Rosa rugosa*. It will thrive best in full sun but will do well in shade and, while naturally the best results will be obtained on good deep loam, it will grow well and flower freely on sandy, gravelly or chalky soils, in heavy clay soils and also will grow fairly well in acid peaty soils. It does not mind wind and spurns draughts and it is extremely hardy. Moreover, greenfly seems to fight shy of its bristly stems and other pests and diseases seldom trouble it. It flowers from June until November; the flowers are most deliciously and sweetly fragrant, their scent carrying afar, and the single types bear immense red hips, while November brings a brilliant yellow to the dying leaves. It is vigorous and needs no pruning, filling out into a wide dome of branches some eight feet across and six or seven feet high. It is furnished to the ground, thus smothering weeds.

There are very few flowering shrubs that can put up such a show of attributes as *Rosa rugosa*. Now what are its defects? Shall we say a coarseness of stem? Yet, when you raise the dense furnishing of leaves—glossy and beautifully veined and of rich green—the multitudes of bristles and thorns which cover the shoots are of the most beautiful pale green. Shall we say they have shapeless flowers? This would only be true of the double varieties and only then by comparison with an accepted standard in other sections; the singles are as beautiful as any wild rose. Shall we complain of the “suckering” habit? This need only trouble those who grow them on their own roots; those whose gardens offer only limited space should grow only “budded” plants. Nevertheless, in wider areas, the colonizing habit is a wonderful asset, giving a rejuvenat-

ing effect to a bush that continually grows in beauty.

Unfortunately, to many people, *Rosa rugosa* is only known as a “sucker” from the roots of the hybrid tea or other modern rose, being not infrequently used as an understock for propagation in nurseries. And the type used for this purpose is a very thrifty form or hybrid which makes lanky shoots and bears poor lilac-pink blossoms, and has none of the garden qualities which are so apparent in the typical forms. Just what is the botanical status of this widely known understock I have been unable to find out, but it is certainly not typical *Rosa rugosa*.

Let us, therefore, set aside this usurper, this “underdog of an understock,” as I have heard it called; this “plain Jane” of the family, and see what the type species, its forms and its hybrids have to offer us in the way of color and variety for the garden. According to Rehder (Manual of Trees and Shrubs) *Rosa rugosa typica* is the correct name for the form known as *R. rugosa rubra* or *atropurpurea* in gardens. This Japanese Rose, or “Ramanas Rose,” is a very old horticultural favorite, and has been known for ages by races in the Middle East as well as in its native areas, where its appearance in artists’ work on pottery and in pictures proves its lengthy popularity. It is a native of North China, Korea and Japan, and northwards to Kamchatka, and was brought to England in 1845.

It has given rise to a number of color forms, both double and single, and all are noted for their lovely foliage, dense rounded habit, sweet blooms in clusters, long flowering season and immense hips, golden autumn color and an ability to make a fine shrub without pruning. *Rosa r. typica* has flowers of rich dark wine crimson; *alba* (*R. r. albiflora*) has white blooms of a firm yet transparent quality; there is a very large flowered form with extra large leaves and hips, and huge blooms some five inches across called *R. r. scabrosa* (I believe

*Reprinted with the permission of the author and the editor of the Journal of the Royal Caledonian Horticultural Society, Edinburgh, Scotland, Vol. III, 1950.

this to be the same as the plant found sometimes under the name of *R. Regeliana* which is a synonym of *Rosa rugosa*); and last but not least is the exquisite "Frau Dagmar Hartopp" (or Hastrup). This also has large flowers of a soft light pink with an indefinable opaque quality and yet a clarity of tone found in no others; it is more compact than the others and has dark crimson hips instead of the usual bright red. I doubt if it will attain much more than five feet in height and is usually only four feet and quite as wide.

The double, or perhaps we should say nearly double, forms have the same handsome qualities of the type except that only an occasional hip appears. The best known is "Blanc Double de Coubert," a beautiful white with loosely double flowers; it is described by Rehder as being a Tea Rose Hybrid, but it shows nothing of this parent in its general bearing. A kind friend has recently sent me a full double white form for which I have so far found no name unless it be the *R. r. albo-plena* of the books: "Rosaie de l'Hay" may be called the double form of *R. r. typica*, for it has flowers of the same rich wine-crimson; it is a refulgent crimson-purple in some lights, a gorgeous variety. An inferior type is called "Hansa"; the flowers are more double, but of a harsh color, and it has a less good habit. I have come across two lilac-pink forms of splendid habit; the more usual is "Belle Poitevine," but I prefer "Delicata." The former has larger flowers but is again of a rather harsh tint while "Delicata" has a delightful cool tone. All the above have another charm—their stamens, which, unlike so many other flowers, are of a light, creamy yellow. The contrast is in all forms very pleasing, but specially so in the singles and in "Delicata." All of the above typical varieties except "Frau D. Hartopp" must be given at least seven feet square of space and in such an area they will gradually fill out and make a handsome specimen—handsome enough to stand in an isolated position or to add point to a mixture of shrubs.

So far we have considered only *Rosa rugosa* and its forms. The species is very prone to hybridization and many crosses have occurred

and been made, some good, some indifferent, and some bad. Only one, so far as I know, has the admirable habit of the species and that is *R. micrugosa* (*R. rugosa* x *Roxburghii*; this hybrid is sometimes known as *R. Vilmorinii*). It makes a rounded shrub to six feet or so with handsome foliage, tending to obscure the large delicate pink blooms, which derive their quality from *R. Roxburghii*, or *microphylla*. With *R. rubrifolia*, *R. rugosa* has given us a hybrid called "Carminetta"; I would describe this as an inferior *R. rubrifolia*, but it must be admitted that its vigor and larger flowers might make it useful in drier areas where *R. rubrifolia* might not thrive; the foliage is of a glaucous hue, but not as colorful as that of *R. rubrifolia*, and the small flowers are borne in bunches; they are bright pink with white centers. It has not fruited with me.

Several very interesting hybrids are now beginning to find favor among those who look into the genus *Rosa* for their garden material, and two of the most noteworthy are "Schneezwerg" and "Agnes." The former has *Rosa bracteata* for its other parent and has the most charming flat semi-double white flowers in clusters with creamy yellow eyes borne from June to November and bearing bunches of small scarlet hips with the later crops. The thorns and leaves, as well as the flowers, share the characters of each parent and, while I have always thought of this as a shrub up to four feet, I have been astonished this year to find it growing up to six feet or more, every shoot terminating in blooms. It appears to be perfectly hardy in spite of one parent being notably tender, and is compact and bushy and a likely hedging shrub. "Agnes" is a very different type. Here the "Persian Yellow" (*R. foetida persinana*) has been brought in and the flowers appear in two or three short bursts; the leaves are rich green on a well-furnished yet erect shrub and the flowers fully double, fragrant, and of a soft and lovely butter-yellow. Apart from this hybrid, yellow has not been brought very successfully into rugosa roses; "Dr. Eckener" and "Golden King"

(Continued on Page Twenty-eight)

Vista Garden at Coulee Dam on the Columbia

THEO H. SCHEFFER*

THE desert or semi-desert has its moods and its surprises. Such make it more interesting for those who choose it for recreation, and perhaps meditation. The sand and the sage may seem all-obtrusive at times, but they are only at your feet. Overhead are bluer skies than you find by the sea, and in the vistas are sculptured form and 'picted color that coastal ranges might envy. Besides, the miracle of the Prophet and the mountain is wrought for you, in spite of appearances, when you go to the desert that has not come to you at bidding. For the desert really comes to you in the more subtle sense of having and to hold. I think the Prophet found that out too—with the mountain.

But the surprise pictured here, at the Grand Coulee Dam of the Columbia, is man-made; in the desert though not of the desert. As you come up the Grand Coulee, of a summer day, you may not appreciate the heat radiated by the enclosing walls. Refreshment is provided, however, as you drop into the little air-cooled government town below the south anchor of the dam. Air-conditioned is the entire village, with its short streets that grid the few blocks between the river and the towering walls of the Coulee. Lawns of vivid green, trees and shrubbery that would not have chosen the inhospitable primitive of the place. All cooled and moistened, to the taste of plants and the senses of man, by the light drift of air from the tumbling cataract of the Columbia.

In the path of this drift of invigorating air, between the falls and village, is this little garden of tree terraces—a sanctuary, we might say, with a welcome alike to the resident and the tourist. The first terrace is about at the street level, its colors rioting to view in their landscaping along with the borders farther on. At one time when we saw this terrace its riot

was heavenly blue of the morning glory, climbing over the lava-block walls. Below this terrace is another with bright borders and a pool against the background of the first level, and glimpses of tumbling white water through the leafy screens. The third terrace fronts the gorge and affords a full view of the falls, with its penstock currents and the amazing rush of water in their intervals. This terrace has a long patio with rough-hewn benches and tables under a pergola shaded by wistaria.

Northwest gardeners and their tourist friends from the south may have missed this patch of sunshine, coolness, verdure and color as they hurried by to the commercial part of the government town, across the bridge. To visit or re-visit this garden is truly worth while, and we have noted that some of the stages stop there briefly. Watering pot and snips seem to be in charge of a lady in slacks, whose manner and accent insist that she is English. She would be, to interpret inborn instincts of the green thumb, or is it fingers?

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Recent Gifts to the Arboretum

The continuing interest in and thought for the Arboretum's needs is well illustrated by the following donations for specific purposes to its funds, in approximately a month from mid-May onwards.

From the Else M. Frye Unit, No. 8, for the Library, \$24.80; Juanita Graham Unit, No. 30, for peonies, \$60; Mary E. Williams Unit, No. 2, for new camellias, \$40; Woodway Park Unit, No. 22, for books, \$30.

✓ ✓ ✓

The collection of thirty varieties of older types of roses, presented by Lake Washington Garden Club, Unit No. 3, in spring, 1950, have been flowering well this summer for the first time and were seen by a visiting group of Unit No. 2 on June 11. The planting is north of Lake Washington Boulevard between Miller and Roanoke Streets, in the center of the rose and crabapple area.

*Mr. Theo H. Scheffer, Collaborator of the U. S. Department of the Interior Fish and Wildlife Service, contributes another of his interesting and informative articles.

THE UNIVERSITY ARBORETUM

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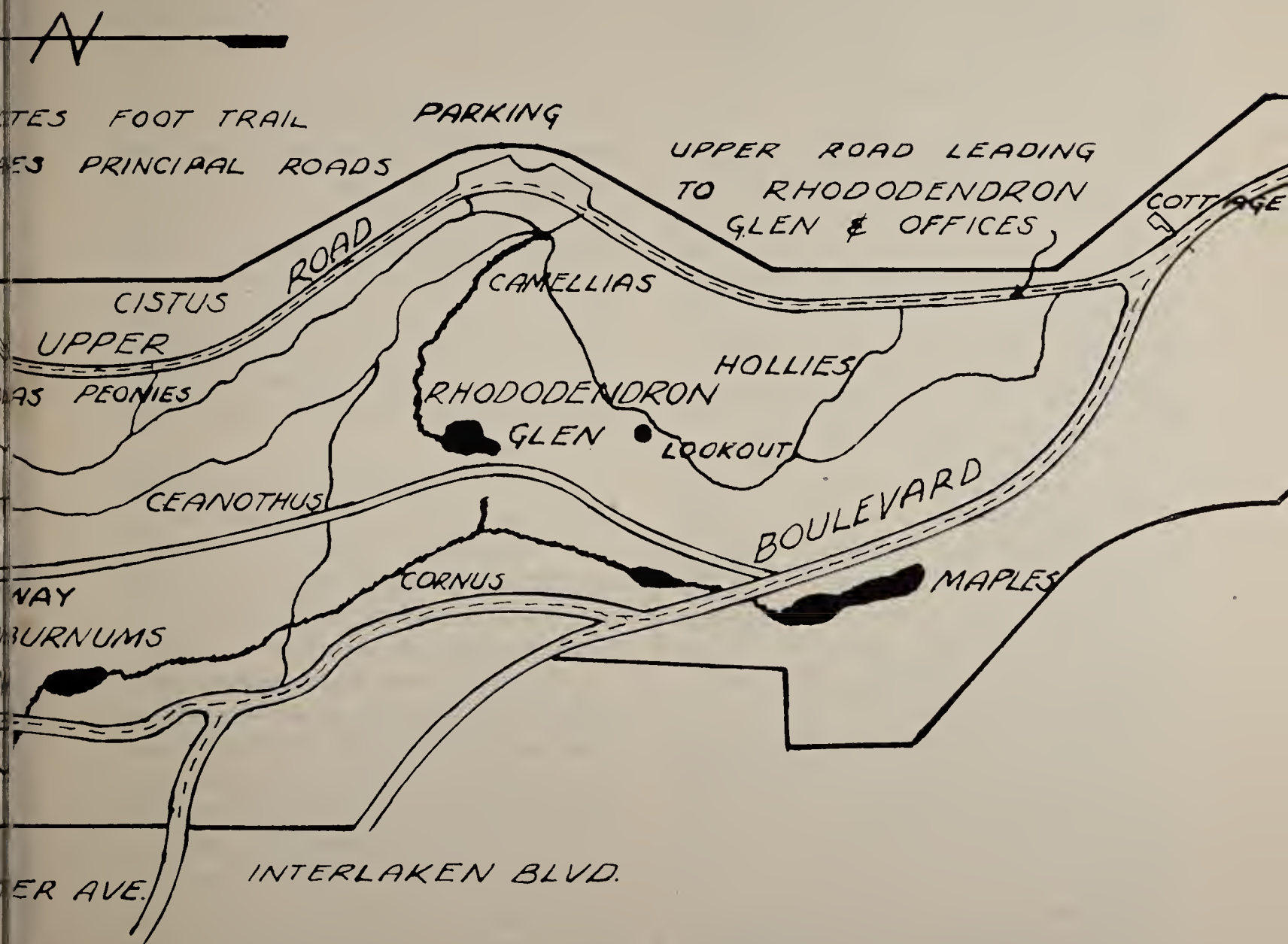
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To keep memberships in the Arboretum Foundation in good standing, dues should be paid during the month payable. Active memberships more than three months in arrears and previously established \$2 memberships more than thirty days in arrears will be dropped and THE BULLETIN will be discontinued.

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Cartography School Makes Arboretum Map Major Project

SEVERAL years ago the Arboretum Amateurs, Unit No. 39 of the Arboretum Foundation, perceived the need for a revised and detailed map of the Arboretum, and obtained approval from the Board of Directors to undertake the project. The expense of survey, the compilation of plantings data, and the cost of art work to permit the use of color with contour lines to indicate topography totaled a seemingly insurmountable obstacle. However, the matter was discussed with Dr. John C. Sherman, assistant professor in the Geography Department of the University of Washington, who agreed to present the idea to his class as a project for advanced students in Cartography.

It is with both pleasure and pride that the announcement now can be made that the art work is completed and engravings will be made shortly; the completed map should be available to the public this summer. The fine cartographic detail is the work of Mr. James Shumin Feng as his final project in the advance course in Cartography. Mr. Willis R. Heath, a Department of Geography major, contributed his factual knowledge of technicalities of reproduction, and the two worked under the over-all direction of Dr. Sherman. Mr. Brian O. Mulligan, director of the Arboretum, edited the Arboretum History and planting details.

Sources of material used in compiling the map include the basic WPA map made in 1935, using contours of one-foot intervals, and a tracing of this map which has been modified by members of the Arboretum staff and kept up to date from the standpoint of plantings, etc. The use of a stereo pair of aerial photographs taken of the same area from two different angles gave third dimension with stereoscope, and from this contour could be checked. This also included the north side close to the lake, not included in original WPA map.

Final map will be in five colors, sheet size approximately 17 by 22 inches, drawn on correction scale of 1 inch to 200 feet. Major

plantings will be indicated, also location of paths, buildings, parking areas, location relative to bus lines, golf course, Seattle Historical Society, and the boulevard approaches.

Dr. Sherman will present the Arboretum map and original color separations, along with 38 other three-dimensional maps of this area, all made by the Cartography Department students, at the meeting August 7 in Washington, D. C., of the International Geographical Union (IGU). This group meets only every three years, the last meeting having been held in Portugal, so probably will not convene in this country again for 25 or 30 years. The map exhibit will be accompanied by descriptive booklet in English and French. Dr. Sherman also plans to make the exhibit available at the meeting of the Pan-American Consultation in Geography in late July in Washington, D. C., at which commercial maps will be displayed also.

MRS. FRANK CALVERT

✓ ✓ ✓

Eucryphias

SOME fifteen years ago I imported from England four varieties of *Eucryphias*. August flowering trees such as these would, I hoped, help to achieve what many gardeners aspire to: a garden with succession of bloom using only trees and shrubs.

E. glutinosa is entirely hardy here and has beautiful white flowers, 2½ inches across, with numerous prominent yellow stamens. It is not evergreen, the leaves turning yellow before falling off in the fall. The habit is loose but graceful. No other flowering tree or shrub in the garden can equal this in August.

E. Rostrevor (intermedia) is a natural hybrid between *glutinosa* and *lucida*. The flowers are similar to the former, about 1½ inches across, but it is more free-flowering. It is practically evergreen and grows taller and broader than *E. glutinosa*. When young, *i.e.* less than 8 feet tall, a severe winter will kill the top growth but usually it will grow again from the ground. Older trees apparently are entirely hardy.

E. Nymansay, a hybrid (*E. cordifolia* x *E. glutinosa*) is a vigorous evergreen tree with

larger leaves than either of the preceding. It is columnar in form. My oldest tree is almost 40 feet high. It is covered in August, particularly in the upper portion, with white flowers 2 inches across. The tree is hardy in a sheltered location.

E. cordifolia died when 4 feet high during a severe winter.

E. lucida (Billardieri) recently acquired, has not yet flowered.

Eucryphias need a well-drained, peaty soil with old manure applied during the spring in alternate years as a top dressing. They strike easily from cuttings. I can recommend highly to all garden owners the three varieties first described above.

DONALD G. GRAHAM

✓ ✓ ✓

Notes on the Pruning of Hydrangeas

THE main body of hydrangeas require no pruning other than the removal of dead flower heads and the thinning out, at ground level, of the older and weaker wood.

Exceptions to this are *H. petiolaris*, the climbing hydrangea, which needs pruning only when grown against a wall or fence and should then be cut back, just after flowering time, to keep it in bounds.

The hybrid *H. macrophylla (H. opuloides or H. hortensis)* should be pruned in February by removing the older shoots and leaving all young growth at full length. The flower heads can be left on during winter as a useful decoration and protection—and should only be removed if attacked by fungus diseases.

H. paniculata and *H. paniculata grandiflora* need severe pruning in early March if the quality of the flowers is to be maintained. The best method is to remove all weak shoots entirely and to cut out any old wood that is crowding the center. All the shoots of the previous year's growth are then cut back to within two buds or eyes of their point of origin.

H. arborescens and *H. radiata* must be pruned in February by removing all old crowded shoots and by cutting back the growth of the previous year to approximately twelve inches.

BRYAN TAYLOR

BOOK REVIEWS

The Rhododendron Year Book, 1951-52. 194 pages, four full-page color plates, 71 black and white illustrations. Published by The Royal Horticultural Society, Vincent Square, S. W. 1, London, England. Price \$2.40.

BEGINNING with the year 1945, The Royal Horticultural Society has each year published *The Rhododendron Year Book*. Each one has been highly interesting and beautifully illustrated, containing a great wealth of helpful material for those interested in Rhododendrons. Each *Year Book* has contained an article on one or more of the great gardens of England: The Rothschild gardens at Exbury; Lord Aberconway's garden at Bodnant, North Wales; the late J. B. Stevenson's gardens at Tower Court, Ascot; Rowallane, Caerhays Castle, and many others.

The Rhododendron Year Book 1951-52 is no exception to this series of most interesting and informative articles on the genus *Rhododendron*; the editors are to be congratulated on the compilation of the articles and the illustrations so beautifully done.

A continuation of the descriptions of British gardens is contained in the chapter, "Rhododendrons at Brodick Castle, Isle of Aran," by the Duchess of Montrose and J. P. T. Boscawen. This rocky island off the west coast of Scotland has proven to be an ideal location for growing the large-leaved Rhododendrons like *grande*, *sino-grande*, *Macabeum*, *giganteum* and *Falconeri*. The *Maddenii* series, including *R. Taggianum*, *R. Lindleyi*, *R. Dalhousiae*, *R. rhabdotum* and others, seem to be ideally situated here.

In further descriptions of British gardens, "Rhododendrons in East Anglia—Sheringham Park," by Thomas Upcher, tells of the successful growing of hundreds of hybrids and species in a colder part of England. Of interest to many Americans is the story of the Glenn Dale Azaleas by B. Y. Morrison. Much has been written about these new azaleas, especially for use on the east coast. They now are finding their way to the gardens of the west coast. Mr. John Wister tells of a new group of hardy Rhododendrons for the east coast of the United States.

Perhaps the outstanding feature of the *Year Book* is the most complete description of *R. repens* yet published, by Mrs. Roza M. Stevenson, wife of the late J. B. Stevenson. The collection of *R. repens* at Tower Court is the most outstanding in existence. The color plate of *R. repens* K. W. 6832 is a splendid job. This plant is said to be the finest flowering example in England. Dr. J. MacQueen Cowan and H. H. Davidian, those expert botanists, complete the botanical story of *R. repens*.

"Rhododendrons for the Greenhouse," by Francis Hanger, Curator of the Royal Horticultural Society's Gardens at Wisley, is a most informative article to those interested in the more tender varieties.

A most unusual paper on "Rhododendrons in New Guinea," by C. R. Stoner, relates interesting descriptions and experiences with those southernmost members of the genus. Mr. Russell of the Sunningdale Nurseries, formerly the old Harry White Nursery, where many of the older hybrids came from, gives us a paper on

"Rhododendrons as Foliage Plants." Mr. G. Donald Waterer, whose grandfather originated that great hybrid "Pink Pearl," and whose nursery has produced the famous Knap Hill Azaleas, is most qualified to write an article on "Deciduous Azaleas." Frederick Street, another famous nurseryman, provides an article on hybrids of *R. caucasicum*.

A very important work by Dr. J. McQueen Cowan and H. H. Davidian on the *Thomsonii* series will be appreciated by those interested in the botanical classification of the species and sub-species.

Completing the *Year Book*, a discussion of Bud Blast by a group of experts, the List of Awards given for 1951, and not the least, a description of the Rhododendron Show at Vincent Square, London.

GEO. D. GRACE / / /

The Lily Year Book, 1951-52, published by The Royal Horticultural Society, Vincent Square, S. W. 1, London. Price \$2.40.

THE LILY GROUP of the Royal Horticultural Society has recently published the 1951-1952 year book thoughtfully compiled and edited to be of interest to amateurs as well as to scientific gardeners.

One realizes how simple and interesting lily culture is, and that lilies are suited to a variety of soils and conditions. In a chapter by Richard G. Walker entitled "In Simple Language for the Beginner," all phases of cultivation are covered with no necessary information missing. It includes basic cultural requirements, directions for placement, for fertilization, for disease prevention—a gold mine for beginners.

Included is a fine list of lilies, beautiful but not at all difficult.

The article entitled "Breeding of Lilies" by Dr. S. L. Emsweller of the U. S. Department of Agriculture of Beltsville, Maryland, is a really scientific presentation of the subject. While somewhat detailed it is not beyond the understanding of the average studious gardener, and does, in fact, make pollenizing techniques understandable. It unlocks the door of a new field. The analyses of chromosomes of various lilies, of findings relative to colchicine-induced tetraploids are most, most interesting.

The bibliography at the close of the article is in itself impressive.

Jan de Graaff—himself a frequent contributor to lily literature—writes a chapter in his easy, informative fashion on the writings of others on his favorite subject.

Mr. T. Hay in "Popularizing the Lily" suggests means to this laudable end.

The work of the Oregon Experiment Station on *Lilium speciosum* hybrids is brought up to date. Some extremely handsome hybrids have been here developed with more in the making.

The above is only sampling the collections of informative articles in the book. Authentic in its information, it will be a valuable reference work.

Photographs of global scope well illustrate the book, showing the versatile nature of the lily and the universal interest presently shown in its culture.

SALLY BUNGE

The Rhododendron Handbook, 1952, Royal Horticultural Society, London, England. \$3.25.

THE 1952 RHODODENDRON HANDBOOK, of the R. H. S., was published early this year, and there are so many significant changes, among species and commercial hybrids, and also among pedigree hybrids, as to make it a must for those who are interested in Rhododendrons.

Perhaps most important is the revision of species by Dr. Cowan and Mr. Davidian of Edinburgh. The details are published in the *Rhododendron Yearbook* so those volumes are necessary to the serious student of this genus.

There are a few additions to the list of synonyms, but the lists of collectors numbers are practically the same as in the 1947 *Handbook*.

Among the commercial hybrids there are quite a few changes, with some being dropped from the list, some favorites losing stars, and a number of new ones given higher ratings.

There are many additions to the list of deciduous azaleas, the new ones being mostly from the Knap Hill Nursery. The Evergreen azalea list is not much changed. It is very interesting to note how the number of pedigree hybrids has increased. In 1934, the year the Stud list first was compiled, it contained 243 crosses; in 1947 889 crosses, and in 1952, 1072 crosses, that can be traced back to a species.

Then, too, there are varieties of named forms also listed, making the book very complete, and very necessary to the enthusiast.

✓ ✓ ✓ LESTER BRANDT

Rhododendrons, by F. Kingdon Ward. Pellegrini and Cudahey, New York (1949). Price \$1.15.

A GOOD BOOK for the Rhododendron grower is a rarity, but Kingdon Ward's *Rhododendrons* is more than a good book for it combines a knowledge not only of Rhododendrons as grown in our gardens but a background of exploration in the wilds of Asia as well as a keen appreciation of the beauty of Rhododendron species.

While there have been various publications and articles covering numerous phases of the Rhododendron genus, the author points out in his preface that only three small volumes for the average gardener have previously appeared in Great Britain, the last in 1926, and these are no longer available. In America we have had Mr. Bower's excellent "Rhododendrons and Azaleas," but that was published in 1936, nearly sixteen years ago.

The purpose of the present volume is a review of Rhododendron experience and an up-to-date prospective on the use of both species and hybrids and their respective value in the garden. While the author admits a partiality toward species he nevertheless evaluates both very fairly and outlines the uses to which each is best adapted.

It is not a book to guide in the selection of new hybrids but it does make recommendations on suitable species or rather his preference for some of them and the reasons why they have been selected. One of its greatest values is in what not to expect as to hardiness and flowering age.

Mr. Kingdon Ward's first chapter on "Rhododendrons at Large" is a brief outline of the British horticultural explorations in Asia and the effect they have had not only on Rhododendron culture but on gardening in general. Dr.

J. D. Hooker was among the first of the explorers and made his discoveries in Sikkim in 1849-51. Some thirty species were introduced at that time and the merit of these is recognized immediately when you mention such favorites as *R. barbatum*, *campylocarpum*, *cinnabarinum*, *Falconeri*, *Thomsonii* and *R. Griffithianum*. These and other species scattered throughout the British Isles, with nearly a hundred years' growth back of them and subject to all the vagaries of time and weather, are notable proof of Dr. Hooker's great contribution.

There were further outstanding discoveries until after the turn of the century when E. H. Wilson began collecting for Veitch's nursery. However, in the meantime a few other Rhododendrons, especially azaleas, trickled through and in 1900 there were about one hundred species of Rhododendron being grown in England, exclusive of azaleas. These were "European, Oriental, Siberian, Himalayan, North American and a few Chinese." The list is important to remember, for the first real collection of Chinese Rhododendrons which are so important today began with Wilson's exploration into Central and Western China. Such Chinese species as *R. Augustini*, *yunnanense*, *Williamsianum*, *discolor*, *auriculatum* and *rubiginosum* are only a few of the many which have become well known and well established since the beginning of World War I.

Forrest entered the field in 1911 and continued to 1931. Kingdon Ward explored in W. China, Thibet, Burma and Assam from 1913 to 1933. Ludlow, Sheriff and Taylor continued in 1936-37. While no mention is made of Rock's discoveries it may be said he was in the field from 1923 until a few years ago.

Thus, says the author, in the first forty years of the century some five hundred new species were discovered and introduced by British explorers alone—"superb plants which for aeons had been flowering unseen in the mountains of Asia."

The character of these plants and their hardiness can to a degree be determined by the areas in which they were collected. The fact that the introduction of many dwarf species coincided with the development and vogue of rock gardens added importance to these early twentieth century discoveries.

The chapter on classification will strike a sympathetic note for many growers who have wrestled with the intricacies of botanical differences or who have even been asked to explain just what a Rhododendron is. That a notable authority should question the inclusion of so many varying forms under one genus makes us realize that we are not alone in our difficulties. Yet it also creates a little fear for he suggests the possible division into four separate genera which would mean a realigning of our thinking after years of effort trying to acquire knowledge of only one. But he suggests that there is little chance of this for the Rhododendron genus seems to be sacrosanct to botanists.

"Species and Hybrids" will stimulate anew the ever-present controversy on the merits of each. The author makes clear his own preference in the first paragraph. "Except in the Azalea group" he says "it is doubtful whether any hybrid superior to the parent species has ever

been produced." Despite this he admits that hybrids have produced larger flowers, more precious tints, that "strength has been put into the delicate, color into the pallid, quality into the undistinguished," yet he feels that for every thing gained something has been lost; that there is in the species a superiority of fibre, a fineness of texture, a beauty of foliage and form which gives them an individuality hard to describe but superior, real and lasting.

"Rhododendrons As Trees" is a most interesting and instructive chapter for it presents a vision and a caution. There are few of us who have seen or read of those magnificent tree specimens and not thrilled with the desire of ownership. There is a fascination in the very words "Tree Rhododendrons" which many Asiatic explorers have described, yet before embarking upon such an undertaking we should consider three essential factors—time, space and climate. Time because the finest specimens in cultivation are upwards of fifty years in age and few of us can look forward to enjoying them in our lifetime unless fairly mature plants are purchased. It has been said that it takes twenty years to know the beauty of a tree Rhododendron and at least another thirty to know their splendor.

This reviewer has a number of such plants over twenty years of age and only one, *R. barbatum*, has given a glimpse of its ultimate beauty. While it has flowered sparsely for a number of years it was not until its twenty-third birthday that it made a real display, covering itself with nearly one hundred blooms, yet it is scarcely eight feet in height and is expected to attain forty feet.

Space is next because many of the so-called tree Rhododendrons are in reality huge shrubs that attain as much or more in width as in height. Obviously, such a plant has no place in a small garden. Furthermore, many of the large-leaf species require a woodland area for protection.

Climate should perhaps be the first consideration for as Kingdon Ward says, "the horrid truth is that nearly all genuine unmistakable tree Rhododendrons are tender" in England "although most of them do fairly well in mild districts."

Each individual must make his own decisions as to what tree species to try. However, it should be said that if you go in for the large-leaved varieties they are well worth growing for their foliage alone.

The chapter on "Shrubs" is devoted to moderate-size plants as apart from dwarf shrubs. It deals exclusively with species and contains many worthwhile suggestions on what is desirable for the amateur gardener to begin with as well as words of caution on what to avoid and the reasons for this caution. Those of us who have experimented with many of these will register hearty approval to most of his comments. To wait years for a "sulky" plant to flower only to find it is disappointing in color is properly the task of specialists and plant breeders. It is far better for the average gardener to try those of proven merit and reasonably early flowering age.

It is especially gratifying to one who is partial to distinctive foliage types to see so many favorites in the selected list he recommends. Many

combine not only distinction of foliage but beauty of flower and color as well. He holds in high esteem the narrow-leaved Triflorums such as *R. Augustini*, *yunnanense* and *R. lutescens*, along with *R. rubiginosum* and that lovely Sikkim plant *R. cinnabarinum*. Then there are those rounded-leaved species such as *R. Thomsonii*, *orbiculare* and back to the Triflorums, with *R. oreotrephe*s and *R. timeteum*. Among many others suggested we mention only two for their splendid yellow flowers, *R. campylocarpum* and *R. Wardii*.

Under "Dwarf Rhododendrons" are included those for rock gardens, edgings and bedding. Here again are plants of proven merit and beauty—gems which sparkle with the brilliance of Asiatic color.

There are Chinese Lapponicums such as *R. impeditum* and *R. russatum*; *R. imperator*, the "Purple Emperor" from Burma; the charming *R. leucaspis* and *R. moupinense* from Thibet and Western China; *R. deliense* from Assam and again the Chinese *R. Williamsianum*, a must for every garden. These are but a few of many choice species now available.

The chapter on Azaleas is the shortest but packed full of useful information. Best of all it gives a key to most of the intricate nomenclature which so frequently confounds the amateur.

"Hybrids" deals largely with the historical background leading up to the many fine plants which we know today. It also includes a suggested list of his own selection as to color and time of flowering as well as the characteristics of species Rhododendrons which have been extensively used as parents.

"Cultivation" and "Propagation" presents standard practice useful to all interested in the genus.

Chapter XII "On the Choice of Species" must be read to be fully appreciated. It is a combination of horticultural advice, experience, philosophy and humor and can best be dealt with here by quoting his final paragraph:

"Catalogue descriptions are terse and to the point, but they tell you very little, though that little is, in the main, true. As for descriptions in books, every writer on gardening writes of the plants as he sees them; either in a burst of unalloyed optimism or in a mood of abject pessimism, and no two descriptions of a Rhododendron, for example, even remotely resemble one another, still less the plant they are describing. Indeed, it always surprises me that writers of gardening books in which descriptions of the author's favored and despised plants figure prominently, do not guard themselves against a writ of libel by blandly stating at the outset, 'The plants described in this book are entirely imaginary. Any resemblance they bear to plants living or dead is purely accidental'. (N.B.—This does not apply to the present author.)"

HERBERT IHRIG

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ARBORETUM NOTEBOOK

This department is published for correspondence and pertinent comments by experienced growers on interesting plants and their culture. We solicit your questions but space limitation necessitates the publishing of only such answers as we deem of general interest.

GARDEN NOTES AND HINTS

June

If one has room for a cutting garden, a sunny space 20x20 feet will grow 24 different varieties of annuals. There may be six rows cut into four lengths each. At least five feet of row is needed for an abundance of one variety. Rows should run north and south with four feet between for "scuffling." No paths. Stakes and brush should be used for the tall varieties.

If the seedlings from phlox plants are constantly removed, one will not complain that his plants have reverted to type and all become magenta in color. Phlox, when dead flowers are not cut, seed themselves, grow rapidly and bloom, reproducing their original colors. Propagate your good plants by dividing the clumps. Phlox should have morning sun.

For a damp, shady spot, nothing has more style than funkias (*Hostas*). The foliage is a spring-like green of large, interesting leaves with many prominent veins. There is an excellent variety with late summer-blooming, fragrant white blossoms (*H. plantaginea*). Funkias are perfect companions for lilies.

Clematis montana should be pruned back now, cutting away any weak stems or those that have just flowered. If the vine is old and overgrown, some of the old, heavy stems may be cut away at the base.

This is the month for *Cornus Kousa*, the Chinese dogwood. The little salmon azalea, called *Rhododendron indicum*, planted under *Cornus Kousa*, makes an effective picture. There is a form of *R. indicum* called *balsaminaeflorum* (syn. *rosae flora*) which is especially pleasing.

July

This is the month to visit gardens: "Look and Learn." It may be advantageous to look over one's own garden before visiting and note the things not quite to your satisfaction. Then see what other gardeners have done in similar

circumstances. Most gardeners love to be asked questions! Also note new flowers and their names.

A routine for the methodical gardener:

MONDAY—Water deeply and well.

TUESDAY—Fertilizer where needed.

WEDNESDAY—Spray.

THURSDAY—Prune here and there.

FRIDAY—Pick off dead blooms.

SATURDAY—Stir soil about plants and shrubs.

An hour each day spent following the above routine should keep the small garden growing well and free from pests.

A highlight of the July garden is the fragrant, Spanish broom, *Spartium junceum*. Intelligent pruning makes it a graceful feature of mid-summer.

When through blooming, aubrietas, helianthemums and other trailing plants may be turned back and the old growth cut out from beneath. The younger growth will then cover the space left bare. The growing ends or tips of the parts cut away can be used for cuttings. They root easily if placed in a flat of sandy soil and kept in a cool, shady area.

The perennial border and the annual border especially need fertilizer regularly. Apply "weak and often," generally about every two weeks. When feeding the fertilizer should never touch the plant itself.

August

When picking flowers, as early as possible in the morning is best. The stems should be placed in a deep container with several inches of water.

Lilium candidum, the beautiful "Madonna Lily," should be planted not later than August. If given a favorable spot it is the queen of all lilies. There are new varieties being raised in the Northwest much finer than the old, loved ones of cottage gardens. No other lily is so immaculately white and no other is more deliciously fragrant. It prefers lime but will

bloom quite happily in any well-drained soil, in sun or shade. It has a peculiar habit, different from most other lilies, of sending up a husky growth of leaves in the late summer or fall which freezing weather does little to discourage. The bulbs should be planted not deeper than two or three inches under the surface of the soil. The new varieties seem quite free from the disease that somewhat marred the beauty of the older ones and in time ruined the bulbs. They do their best when not disturbed but allowed to form a large clump.

Now the hydrangeas are beginning to bloom. The many forms of this magnificent family are becoming very fashionable, perhaps because our naturally acid soil and our generally fairly mild winters keep them in fine color and growth. To know the correct names of each member of the hydrangea family is a very especial indication of a discriminating gardener.

More about seeds. Mrs. Beth Malmo allows the seeds of *Narcissus Triandrus albus*, Angel's Tears, to seed themselves where they drop around the mother bulb. As *Triandrus albus* is somewhat short-lived, this keeps the planting coming on after the original bulbs disappear. Mrs. Malmo tells of a little-known aconite she is growing, quite different from the fall-blooming blue Monk's hood. It is *Aconitum Anthora* and grows one to two feet high with racemes of pale yellow blossoms. It blooms in June and July. Bailey says there are several varieties of *A. Anthora*.

List of Plant Names

(Continued from Spring, 1952)

Forsythia	after William Forsyth, English horticulturist
Fortunella	after Robert Fortune, plant explorer
Fothergilla	after John Fothergill, English physician
Fouquieria	after Pierre Fouquier, Professor of Medicine, Paris
foveolatus	pitted
Fragaria	Latin fragrance, from smell of fruit
fragarioides	strawberry-like
fragilis	fragile, brittle
fragrans	fragrant
fragrantissimus	very fragrant

Francoa	after Father Franco, 16th century promoter of botany
Frankenia	after John Frankenius, Swedish botanist
Frasera	after John Fraser, English botanist
fraxineus	like fraxinus
Fraxinus	ancient Latin name
fraxinifolius	fraxinus-leaved
Freesia	name unexplained, perhaps personal
Fremontia	after John Charles Fremont
Freycinetia	after Chas. Louis de Freycinet, French navigator
frigidus	cold, of cold regions
Fritillaria	Latin fritillus, checkerboard or dice box
Froelichia	after J. A. Froelich, German physician
frondosus	leafy
fructifera	fruit bearing
fructigenus	fruitful
frumentaceus	pertaining to grain
frutescens	shrubby, bushy
frutex	a shrub or bush
fruticans	shrubby, shrub-like
fruticosus	shrubby
fucatus	painted, dyed
Fuchsia	after Leonard Fuchs, German professor of medicine
fuchsioides	Fuchsia-like
fulgens	shining, glistening
fulgidus	shining
fuliginosus	sooty, black colored
fulvescens	fulvous
fulvidus	slightly tawny
fulvus	tawny,
Fumaria	Latin fumus, smoke, from odor of roots
funiculatus	like a slender rope
furcans	forked
furfuraceus	scurfy
fuscifolius	fuscous-leaved
fuscus	brown, dusty
fusiformis	spindle shaped
Gagea	after Sir Thomas Gage, British botanist
Gaillardia	after M. Gaillard, a patron of botany
galacifolius	galax-leaved
galactinum	milky
Galanthus	Gr. milk flower
Galax	Gr. meaning milk
Galeandra	Gr. for helmet and stamen
galeatus	helmeted
Galega	Gr. gala, milk
galericulatus	helmet-like
galioides	galium-like
Galium	from Galion, a plant used in curdling milk
gallicus	of Gaul or France; also per- taining to cock or rooster
Galtonia	after Sir Francis Galton
Gamolepis	Gr. united scales
gangeticus	of the Ganges
Garcinia	after Lawrence Garcin, a collector in India
Gardenia	after Alexander Garden, M.D., of Charleston, S. C.
garganicus	belonging to Gargano, Italy
Garrya	after Nicholas Garry, sec'y of Hudson's Bay Co.

Gasteria	Gr. gaster, belly (swollen base of flower)
Gastrochilus	Gr. swollen lip
Gaultheria	after Dr. Gaulthier of Quebec
Gaura	Gr. superb
Gaya	after Jacques Gay, a writer on W. South American plants
Gaylussacia	after J. L. Gaylussac, French chemist
Gazania	after Theodore of Gaza; translator of Aristotle and Theophrastus
gelidus	ice-cold
Gelsemium	from Gelsemina, Italian name of true Jessamine
geminatus	twin
geminiflorus	twin-flowered
geminispinus	twin-spined
gemmatus	bearing buds
gemmifera	bud-bearing
generalis	general, prevailing
geniculatus	bent like a knee, jointed
Gentiana	after Gentius, King of Illyria
geometricus	in a pattern
georgianus	of Georgia
geranioides	geranium-like
Geranium	Gr. crane, from resemblance of fruit to crane's bill
Gerbera	after Gerber, a German naturalist
germanicus	German
Gesneria	after Conrad Gesner, naturalist
Geum	probably from Gr. geuo, to have a taste
Gevuina	Chilian name
gibberosus	humped, hunch-backed
gibbosus	swollen on one side
gibraltaricus	of Gibraltar
giganteus	gigantic, very large
gigantes	giant-flowered
gigas	of giants, immense
Gilia	after Philipp Gil, Spanish botanist
Gilibertia	after J. E. Gilbert, French botanist
Gillenia	after A. Gille, a German botanist
Ginkgo	Chinese name transliterated
glabellus	smoothish
glaber	glabrous, smooth
glaberrimus	very smooth
glabratus	somewhat glabrous
glabrescens	becoming hairless
glacialis	icy, frozen
gladiatus	sword-like
Gladiolus	diminutive of Lat. gladius, a sword
glandiformis	gland-formed
glandulifera	gland-bearing
glandulosus	glandular
glaucescens	becoming glaucous
glaucifolius	glaucous-leaved
Glaucium	referring to glaucous foliage
glaucophyllus	glaucous-leaved, shining covering
glaucus	with a bloom, grey-blue
Glaux	Gr. sea-green
Gleditsia	after Gottlieb Gleditsch, direc- tor, Berlin Botanic Garden
glischrum	sticky
Globularia	flowers in small globular heads
globosus	spherical
globularis	of a little ball or sphere

globulifera	globule or globe-bearing
globulosus	like a little ball
glomeratus	clustered

(Continued on Page Thirty-six)

¹ ¹ ¹ *Spring in the Arboretum* (Continued from Page Three)

printed and are available for 5 cents at the Arboretum office. This shows all the principal trails, as well as roads, ponds and buildings, and the location of the principal groups of plants.

A set of eight lithographed monotone post-cards has been produced for us by the Craftsman Press of Seattle, depicting either scenes or flowering plants in the Arboretum. These are also for sale at two for 5 cents. Towards their cost Unit No. 33 generously contributed \$100, Seattle Garden Club \$50.

Early in April a new leaflet, "Cherry Time," also was published, having a small map of the north end of Azalea Way with a marked trail through the Japanese Cherries there and descriptive notes on nine varieties; Mr. Hansen has been mainly responsible for this production.

Miscellaneous

The Arboretum, its history, site and plantings, and the various activities of the Arboretum Foundation were the subject of a successful Community Workshop program on KING TV on March 28. Among those who took part were Mrs. A. J. Krauss, Mrs. Carl Ballard, Mrs. F. Calvert, Jr., Mrs. W. D. Shannon, Mr. D. G. Graham and the Director. Another program is planned for Thursday, July 3, 11:30 a. m.

At the Seattle Centennial Spring Flower Show, held May 2-11 in the Edmundson Pavilion of the University, the Arboretum again contributed plants of rhododendrons and azaleas to the large exhibit by the city park department, as well as to that set up by the College of Forestry.

Some visitors this spring have been Mr. Lewis Lipp, propagator at the Arnold Arboretum, Boston, Massachusetts; Major Peter Barber of Exbury Gardens, near Southampton, England; Mr. R. Woerner, Assistant Superintendent of Parks, Spokane, and Mr. Donald Stryker of Langlois, Oregon.

Rosa Rugosa

(Continued from Page Sixteen)

being merely vigorous yet inferior hybrid teas to my mind, and "Vanguard" has wonderful vigor and foliage, but I feel it to be coarse and lacking in charm or garden value; it bears large, full blooms of coppery orange. "Sanguinaire" is a bright red rose, almost single, with other roses besides *R. foetida* and *rugosa* in its parentage; it is not a valuable rose, considered from our present point of view. There are many other crosses which may become of interest later when their progeny are used for further hybridizing. *Rosa rugosa* has occasionally been used in hybridizing some of the HT and Polyantha Roses, but its influence has not been sustained. "General Jacqueminot" must, however, be mentioned here as this variety, a cross between *R. rugosa* and *bourboniana*, and botanically classed under *Rosa arnoldiana*, has been used considerably as a parent of modern roses.

Turning now to some of the more "modern" types among good *rugosa* crosses—which it must be admitted lack the admirable habit of the type species—we have "Mrs. Anthony Waterer," "Parfum de l'Hay," "Conrad F. Meyer" and "Sarah Van Fleet." The first two revel in sunshine; in fact, I never saw "Parfum de l'Hay" looking so well as during the long drought and hot weather of 1949. It is not a plant for the cool conditions that bring perfection to so many flowers; it then nods its head, gets Black Spot, and looks a third-rate plant. Both this and "Mrs. Anthony Waterer" are rich in color, a glowing carmine on opening, turning to a more purple shade, pleasing

to some but anathema to others. These two have a reasonably bushy habit and leaves midway between their parents, and "Mrs. Anthony Waterer" is much to be recommended for summer display and occasional later bloom. "Conrad F. Meyer," raised in 1899, was apparently a cross with "Gloire de Dijon"—although it does not really show any proof of this. It is a very vigorous shrub with handsome crimson prickles and elegant leaves, of gaunt habit, but well furnished at the top and is best left to show above other shrubs from the back of the border. The display in June and July of its great, double, intensely fragrant soft round blooms is surpassed by its September display. The sport "Nova Zembla," which occurred in 1907, is a most exquisite form, identical except for its color, which is soft blush; this tint enhances the velvety texture of the flowers. With these two may be grouped another gaunt, strong shrub of equal value and merit, "Sarah Van Fleet," which was raised in 1926 and has semi-double blooms borne singly in May and June and in small and large clusters onwards until the autumn, of clear bright pink, and is again very fragrant. It has the longest and most persistent flowering season of all the roses that have come my way. These three roses are only for the widest of borders and are not suitable for small gardens, although I believe with a hard spring clipping they might make admirable informal hedges, especially "Sarah Van Fleet." Others I have tried are "Hildenbrandseck," "Enchantress" and "Carmen"; the last is a rather erect bush well furnished with light green leaves and bears single dark

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crimson flowers; the others have carmine flowers and are lacking in quality.

Verging still more towards the hybrid teas is "Ruskin" (1928) with vivid crimson fully double blooms, deliciously fragrant on a large bush up to six feet or so. It is not far removed from the hybrid perpetuals, one of which indeed was its parent, "Victor Hugo." "Mme. Georges Bruant" has "Sombreuil," a tea rose for one parent; it is a pleasing white variety but not up to other kinds here in Surrey, except in the autumn; "Sir Thomas Lipton," of similar parentage, I have not had long enough to judge. It is another white kind. These more hybridized types of *rugosa* may be used in the outskirts of modern rose gardens, or in herbaceous and mixed borders where their sturdy qualities can be best appreciated.

A very old *rugosa* type is known as *R. fimbriata* or *dianthiflora*, "Phoebe's Frilled Pink" or the "Carnation Rose." This is a nicely furnished bush with leaves and stems of a thinner nature than the forms I have described as typical; it does indeed approach to the understock type more nearly than the others. I first saw this in an old garden at Weybridge and later at Kew, and in Lady Moore's garden in Dublin. The flowers are of pale pink and fringed like those of a pink, small and fairly double. It is generally considered that the Grootendorst productions are descended from this form, but the parentage of "F. J. Grootendorsts" is given as *R. rugosa rubra* x "Mme. Norbert Lavavaseur"; the two types would therefore appear each to have occurred spontaneously. This variety has crimson flowers in bunches, very distinctly fringed, but I do

not care for the combination of crimson and the dark green of the foliage. On the other hand, "Pink Grootendorst" is a pretty shrub with flowers of a bright, clear pink and splendid contrast with the leaves. This was a lucky sport from the original. There is also "Grootendorst Supreme," with darker and larger flowers than "F. J. Grootendorst." These all make well-furnished shrubs and are constantly in bloom and are suitable for a shrub border where mass is of greater moment than individual quality.

Leaving the more shrubby hybrids we have several sprawlers of considerable merit. *R. rugosa rubra* x *macrantha* produced in 1901 a delightful thorny lax shrub named "Lady Curzon." Inheriting the prickles and leaves of *R. rugosa*, this beautiful plant has the wide, pale pink flowers of *R. macrantha*, up to four inches across, borne in clusters in summer only. It may be used as a shrub, but is best allowed to thread through other bushes and sprawl about as it likes. Still more lax is *Rosa Paulii*, or *R. rugosa repens*, which is *R. arvensis* x *rugosa*. This has white, starry blooms like those of a Clematis and its long trailing rugosa-thorny stems are studded from end to end in clusters. It is a very beautiful sight clothing a bank, or even flat ground, but produces rather too much wood to be treated as a climber, except to sprawl over a stump or hedge. The pink form, *R. Paulii rosea*, has a scintillating beauty all of its own. I have many favorites among single roses, but the sight of a plant of this variety on a sunny morning is of overpowering beauty. The petals have a folded, silky freshness—a freshness of scin-

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tillating texture and of color, for the exceptionally clear pink of the petals merges to white at the base, where the stamens give the finishing touch.

I should not like to give the impression that the above list contains all the varieties and hybrids in which *R. rugosa* has played a part, but enough has perhaps been written to show how wide is the influence of this species on hardy shrub roses—roses which can be left alone for years without attention. For only the few kinds mentioned which approximate the HT and HP classes really need any pruning.

While several of the hybrids have definite garden value, it is the typical varieties, both double and single, which appear to me to fit so well with modern requirements, not the least being their dense, weed-smothering habit; but whenever the subject of *Rugosa* roses comes up for discussion, it should be made clear that the best garden forms come from the true species and not from the well-known understock. Few gardeners would be greatly attracted by variants of this.

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London's Chelsea Physic Garden

(Continued from Page Six)

ing Miller's lifetime, and into several posthumous editions published under several sponsors. It was also translated into Dutch, German and French. The eighth edition is the most important for its new information concerning the descriptions of plants that had not been known before. This edition is still a basic reference work. It was Phillip Miller who first noticed the part played by insects in fertilizing flowers and for this he was elected to the Royal Society. The great Swedish botanist, Linnaeus, called Miller's book a "dictionary, not only of horticulture, but of botany."

The work of the Physic Garden under its new patronage had thus shown much progress and it was decided to send a botanical collector to the American colony of Georgia for the purpose of bringing to England new and otherwise little-known plants. At this time, 1732, Miller sent cotton seed to this same American colony, which, in the annals of the American cotton industry, may be considered the "parent stock of upland cotton"—or the ordinary cotton raised in the southern states.

The most noted visitor to the Physic Garden during its earlier years was the Swedish botanist, Linnaeus. At this time, 1736, Linnaeus was busily engaged in classifying all living things—from elephants to golden-rod. Linnaeus' visit to London was not without some moment, and it is said that Phillip Miller, upon first meeting Linnaeus, thought him ignorant, especially of botany. It was Linnaeus who gave us the standard for naming plants and the animals under the "binomial system" by which all living things would now possess only two names, the surname (genus) and the specific (species) name. As compared to the older and very awkward system of using polynomial combinations of more than two Latin words to describe the species, Linnaeus' standardized system was a momentous advance. Of his visit to the Chelsea Physic Garden, Linnaeus wrote in his diary, "Miller of Chelsea permitted me to collect many plants in the garden, and gave me sev-

eral dried specimens collected in South America.”

Several people who were connected with the garden during the 18th century are worthy of special mention. Sir Joseph Banks, who will be best remembered for his exploits as a botanist in company with Dr. Daniel Solander on Capt. Cook’s first voyage around the world in 1768-71, was an active contributor to the Chelsea Physic Garden in giving valuable advice and financial aid. As a reminder of Banks’ Iceland trip, the Physic Garden is today the possessor of a boatload of black volcanic lava from Mt. Hecla brought by Banks in 1772. These rocks have been used continuously in the rock garden for the past 178 years. It could be that these and some other stones from the Tower of London were the first to be used for the purpose of building a rock garden as we know it in order to simulate habitats for alpine or other low-growing plants.

In 1773, William Curtis was elected to the office of demonstrator and *Praefectus Horti* to the garden. Curtis was a fellow member of the Apothecaries Society and has long since been known for the “Botanical Magazine,” founded by him in 1787. After 165 years, this magazine, with its beautifully colored plates, is still being published as the oldest botanical periodical in continuous publication.

The gardener under Curtis was William Forsyth, who had been taught botany under Phillip Miller. The well-known ornamental shrub *Forsythia* takes its name after this man.

During the years which followed, not a lot of general interest may be noted, although a botanical demonstrator was maintained and the emphasis was mainly on botanical teaching. In 1835, John Lindley, who will be remembered for his voluminous and often critical botanical writings, was appointed *Praefectus Horti* and professor to the Physic Garden. Botany under Lindley’s tutorship became firmly established and a large number of highly qualified students passed under his direction during the next 20 years. Dr. Lindley is well known for his pioneer work on orchids and roses. Many of these works were

sumptuously illustrated by hand-colored plates and are now collectors items whenever they turn up in book lists.

Nathaniel B. Ward will long be remembered for the “Wardian Case” invented by him during his term on the board of examiners of the Chelsea Physic Garden. The Wardian case has long since become the standard method for growing moisture loving plants under conditions of humidity that otherwise would be too dry for them. The importance of this simple cultural aid, for instance, enabled Robert Fortune, an ex-curator of the Chelsea Physic Garden, 1846-48, to transplant 20,000 tea plants a few years later from Shanghai to the Himalaya quite safely in Wardian cases; also the final success in transporting young quinine trees from South America to the East Indies was made possible only after using Wardian cases. In commemoration of Fortune’s lasting work in the Orient, many plants have been named in his honor, such as *Rhododendron Fortunei*, *Cephalotaxus Fortunei*, and *Fortunearia sinensis*.

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Society of Apothecaries, this body felt no longer disposed to maintain the garden out of corporate funds and applied to the Charity Commissioners for a scheme that might relieve the long term of their trust in the garden. Had fate now struck a death blow to this famous garden? The garden was closed! But interest in this institution had not vanished, and the cause was taken to an investigating committee before Parliament where the value of the garden, with its ready facilities as a research institution, was quickly pointed out. The legacy of the garden was quite gratefully accepted by the London Parochial Charities, who contributed 800 pounds a year for its maintenance. The British treasury contributed 150 pounds additional. Under this new arrangement the future of the garden would be amply assured and on May 11, 1899, a new committee met under the head of Mr. William Hayes Fisher. In July, 1900, Mr. William Hales from Kew Gardens was appointed curator. Upon the recommendation of Professor Farmer, the trustees of the garden appropriated 6,000 pounds for the modernizing, which meant the construction of a new lecture hall, laboratory building and residence for the curator; in addition, this money provided for new greenhouses. These buildings were completed and formally opened on July 25, 1902, by the Right Hon. The Earl Cadogan, a lineal descendant of Sir Hans Sloane. The present administration of the garden essentially follows this plan, although the Parochial Charities have since relinquished their interest and now the Board of Education is solely charged with the garden's support.

The present curator, W. G. Mackenzie, has been with the garden since 1946, a time when it was again at a low ebb. During World War II all the glass in the greenhouses had been completely broken from bomb concussion, although the main building miraculously escaped direct hits. But the garden is again in excellent condition. The present work is entirely educational and some four to five thousand students use its facilities during the year. The number of botanical specimens supplied to the London University, Polytechnical and various colleges amounts to nearly 100,000 a year. The garden now grows between 3,000 and 4,000 species for which an "Index Seminum" is issued yearly.

The Chelsea Physic Garden is thus still actively engaged in fostering the progress of botany in the high standard set by the traditions of its founders of 279 years ago. Its very existence over these years is a tribute to those whose deep appreciation for beauty, intellectual curiosity and integrity have enabled this garden to thrive.

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Dr. David Lyall

(Continued from Page Eight)

Sir William Hooker at Kew. There, collections were provisionally arranged and catalogued by the curator of the Herbarium. But when Lyall arrived at Kew, he sorted, labeled and arranged them in one classified collection to compare with Hooker's North American Herbarium. After having been authentically and accurately named, a complete set was laid into the Hookerian Herbarium. Duplicates to the extent of 6,700 specimens were sent to museums and botanists of Europe, North America, India and Australia. Nearly a complete set was sent to Asa Grey at Cambridge, Mass.

His collection of algae has been classified and described by Professor W. H. Harvey, distinguished algologist of the University of Dublin, who has pronounced Lyall's collections so extensive and definite that from them important conclusions regarding the whole marine botany of the Northwest Coast can be drawn. Harvey has given Lyall high praise for his selection of representative specimens and for the fine preservation, both in casks and in dried form, of such unwieldy plants as the gigantic Laminariaceae and for the preservation of long series of different sizes and ages, necessary to determine which was a species, which a variety.

Mr. William Mitten, one of England's most able and assiduous cryptogamists, arranged and named Lyall's extensive collection of Mosses, Hepaticae and Lichens. A large collection of fungi was formed which, it was hoped, would throw some light on species of Northwest America botany. But when the specimens arrived in England, they were found to be poorly preserved and unfit for description.

For many of our Northwest plants, Lyall's specimen is the type of the species. He corrected mistakes of earlier explorers and penetrated regions hitherto unknown. His name has been given to many of our familiar plants, which he collected for the first time: among them, the woolly larch, *Larix Lyallii*; the dainty *Anemone Lyallii*; *Penstemon Lyallii*, and the little *Lupinus Lyallii*, found only in very high places.

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Hydrangeas

(Continued from Page Twelve)

H. Bretschneideri, one of the best truly hardy Hydrangeas, forms a sturdy well-branched plant and blooms in June and July. It comes from the mountains north of Peking and is sometimes known as *H. pekinensis*. It grows to a height of ten feet, has ovate leaves three to five inches long, quite smooth above and more or less downy underneath. The flattish flower clusters, five to six inches in width, have several large sterile ray flowers each about one inch across.

Both these and the fertile flowers are white becoming purplish with age. "It was taken to Europe in 1882, introduced by the famous Dr. Bretschneider, a Russian physician, who wrote a most valuable book on the introduction of Chinese plants. He sent the species to St. Petersburg, where it proved to be the hardiest of the genus, showing greater resistance against cold winters than even *H. paniculata*, commonly cited as the hardiest."—(W. J. Bean, in the July 1929 number of *The New Flora and Sylva*). This most interesting species might be used as a parent in an effort to produce finer flowering hardy hybrids.

H. xanthoneura is closely related, but not quite so hardy as the foregoing species. It is taller, sometimes assuming tree-like proportions, having large, bright green elliptic-oblong sharply pointed leaves. It does not have the exfoliating bark of last year's branchlets so prominent as in *H. Bretschneideri*. The corymbs of white flowers are about six to nine inches across, coming into bloom in late June

and July. It was introduced by E. H. Wilson in 1904 from western China while on a plant hunting expedition for the Veitch Nursery.

The less hardy species include *H. Sargentiana* (Wilson), *H. strigosa* (Rehder), *H. aspera* (Don), *H. villosa* (Rehder), *H. involucrata* (Siebold), and the well-known *H. macrophylla* that includes the numerous Hortensias.

H. Sargentiana was found by E. H. Wilson in 1908 while on one of his trips of exploration in northwest Hupeh, and named it in honor of Chas. Sargent, then director of the Arnold Arboretum. In "China, the Mother of Gardens," Mr. Wilson says, "The most interesting find, however, was a new Hydrangea (*H. Sargentiana*), a shrub five to six feet tall, with stems densely felted with short bristly hairs and large dark green leaves with a velvety lustre in foliage alone, this species is strikingly handsome." Bean says, "So far as foliage is concerned *H. quercifolia* shares with *H. Sargentiana* the distinction of being the most remarkable of Hydrangeas." The leaves are large, up to ten inches in length and eight in width, rich and velvety in appearance. It comes into bloom in July and August and continues into September; the flower heads being flattish, up to ten inches in width, the centers filled with small fertile flowers of pale violet, surrounded by several pink or white sterile ray flowers one to one and a half inches across. The best location is in a thin woodland for it requires shade to flourish, and also needs shelter as it is not particularly hardy. It is a very desirable species.

H. strigosa is an erect growing shrub, attaining a height of seven feet, with branches densely covered with stiff hairs. E. H. Wilson tells of finding it among other lovely shrubs near Ichang, China. The leaves are lanceolate, drawn out to a long point and rounded at the base, the under surface being hairy as are the leaf stalks and leaf veins. The flower head, in August, is about five inches across, lavender sterile flowers surrounding the bluish fertile ones.

Two varieties of this are var. *sterilis* (Rehder) and var. *macrophylla* (Rehder). The

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former has a ball-shaped flower head of sterile flowers, similar to those of *H. Hortensia*. The buds are purplish, opening to a pure white ball. E. H. Wilson collected this variety in western Hupeh. The best form is *H. strigosa macrophylla*. Its leaves are up to one foot in length, and the flower trusses are eight inches wide, with pink or blue ray flowers, some of which are up to two inches in diameter. The small fertile flowers are tinted blue.

H. aspera (Don) and *H. villosa* (Rehder) are closely related to *H. strigosa*, the two latter having softer and more woolly indumentum. *H. aspera* came originally from the Himalaya but has since been found in China. It makes a shrub up to six or eight feet and the sterile flowers are purplish pink.

H. villosa, a shrub of similar size, has blue fertile flowers. The flower stems and leaf stalks are covered with dense curly hairs that are sometimes rust-colored. It blooms in July with corymbs up to six inches across. The leaves are long, narrowing to a point with serrate edges, hairy above, with a greyish white under surface densely covered with curled hairs. *H. villosa* was introduced from Szechuan, China, in 1908 by E. H. Wilson.

H. involucrata (Siebold) is also one of the less hardy species and is of Japanese origin. It is so called because the flower heads are at first enclosed by oval-shaped bracts about an inch long, covered with a whitish down. The leaves, about four inches long by two inches wide, are rough on the upper surface. The flower heads, four or five inches across, have ray flowers of three to five sepals, pale blue or pale pink in color. It is a late bloomer, in August. There are said to be several fine varieties grown in Japan, var. *hortensis* (Maxim.) having more ray flowers of a better color and doubled.

H. macrophylla (Thunberg) covers the whole race of garden hybrids, including both the lace-cap and the *Hortensia* sections, and came originally from Japan. These are undoubtedly the most popular and the most attractive of the genus, but unfortunately are not as hardy as the majority of the species. They are hardy in Zone VII and generally

hardy in the Pacific Northwest. Planted in a semi-shaded position, they produce a magnificent summer display. The partial shade also tends to prolong the flowers and gives protection from cold winds of winter. This type of planting helps conserve the moisture of the soil, so necessary to their well-being.

H. macrophylla may be divided into two classes: the lace-caps, bred for use as flowering shrubs, and the *Hortensias*, having ball or globose heads composed chiefly of sterile flowers. The first-mentioned type is hardier than the *Hortensias* and should be planted out in the woodland garden or border to grow into magnificent shrubs eight to ten or more feet high. The treatment given to fine rhododendrons will serve well for these equally lovely plants.

The following are some of the most desirable of the lace-caps, the type having a center of small fertile flowers surrounded by large ray flowers of various shades of color, lavender, pink, blue and often white. Var. *Mariesii* (pink), var. "White Wave", var. "Blue Wave" and var. "Lanarth White". Var. *Mariesii* and its variety *nigra* are distinguished chiefly by the almost black stems. Both have normally pink ray flowers, the trusses from six to ten inches across.

The *Hortensias*, having great globose heads made up chiefly of sterile flowers, have been bred primarily for florists' use by French, German and Dutch breeders. More than five hundred variations have been developed and named, huge heads and distinct coloration being the chief aims. The individual florets vary in size and color, ranging in all shades of pink and blue to purple and crimson, rarely white. The individual flowers, usually single, ordinarily have four sepals with rounded or serrate edges. A beautiful soft pink double, an old Japanese variety, is called "Domotoi". The florets remind one of small pink rosebuds.

"Mme. F. Moulliere," the best white, is a tall, vigorous grower, whose sepals have serrate edges and turn pink with age. The flowers are distinguished by pink or blue eyes. "Emile Moulliere" is also white with a blue eye and of moderate growth. Another good white is

“Jeanne d’Arc”, with slender but vigorous growth, flower sepals pointed. “Candeur” has pure white flowers with serrate edge and large corymbs; “La France” is white with colored eye; “Ville de Vendome”, creamy white with colored eye.

“Ami Pacquier” is a fine crimson, which in acid soil may become deep wine purple, dwarf to medium in size; “Vulcain” has full sized crimson purple corymbs on a rather dwarf plant; “Westfalen” is vivid crimson or violet, with beautifully shaped flowers, plants dwarf to medium size. “Goliath” is a deep pink with large flowers on small heads, tall and vigorous, a mid-season bloomer. Other good pinks are “Amaranth”, large waved amaranth pink, and “Attraction”, pale pink, free flowering.

“Mousseline”, pale pink easily changed to blue, is a tall, strong grower and excellent bloomer. “Rosabella” is a good pink, mauve or blue, according to soil. “Parsifal” is variable in color from crimson pink to deep blue, serrate sepals; the flower heads last well in shade and take on attractive tints in autumn. “Kluis Superba” is deep pink, violet or deep blue, strong growing and free flowering. “Generale Vicomtesse de Vibraye”, one of the best of the lighter blues, has tall, slender growth and is very free flowering. “Gertrude Glahn” is deep pink or purple; “La Marne” is a tall, handsome grower, late flowering, pale pink but blues readily, large heads with serrate edged sepals.

Since Hydrangeas and Rhododendrons may be planted in borders together, the soil and shade conditions and drainage requirements are similar. Hydrangeas definitely like an acid soil; a mixture of three parts acid loam to one part leaf mold, peat or well-rotted cow manure is suitable. If the soil is too limy (alkaline) chlorosis or yellowing of the foliage is apt to occur, caused by a deficiency of iron. Hydrangeas need both iron and aluminum, found in acid soils. Acidity in the soil is measured by what is called the pH scale, that ranges from 0 to 14, pH 7.0 being neutral; pH 5.0 is suited to the needs of Hydrangeas. Reading up the scale becomes more alkaline.

Propagation. Hydrangeas, especially the

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Hortensia section of *H. macrophylla*, root very readily from cuttings taken in July or August, using half-ripened, non-flowering shoots, with two or three pairs of leaves. Cuttings are made by removing the bottom pair of leaves and making a cut just below the node. Place in sand or sand and decayed leaf mold or peat in a close glass-covered propagating box; keep in a partially shaded position. Cuttings may be dipped in hormone powder to hasten rooting if desired.

Cuttings taken from species do not root as readily. Layering carried out in the usual manner will provide a limited number of strong plants. Growing from seed is a thrilling adventure for the young gardener with the incentive of producing new and perhaps finer forms.

1 1 1

List of Plant Names
 (Continued from Page Twenty-seven)

<i>glomeruliflorus</i>	flowers in glomerules
<i>Gloriosa</i>	Lat. for glorious
<i>gloriosus</i>	glorious, superb
<i>Gloxinia</i>	after P. B. Gloxin of Strassburg
<i>gloxiniodes</i>	Gloxinia-like
<i>glumaceus</i>	with glumes
<i>glutinosus</i>	sticky
<i>Glyceria</i>	Gr. Glukeros, sweet
<i>Glycine</i>	Gr. for sweet
<i>glycinioides</i>	glycine-like
<i>Glycosmis</i>	Gr. for sweet and smell
<i>Glycyrrhiza</i>	Gr. sweet root
<i>Glyptostrobus</i>	engraved or marked cone
<i>Gmelina</i>	after Gmelin, distinguished botanist
<i>Godetia</i>	after C. H. Godet, Swiss botanist
<i>Gomphocarpus</i>	club-fruit
<i>gomphocephalus</i>	club-headed
<i>Gompholobium</i>	club-shaped pod
<i>gomphococcus</i>	club-berry
<i>Gongora</i>	after Don Caballero y Gongora
<i>gonialus</i>	angled, cornered
<i>goniocalyx</i>	calyx-covered
<i>Goodia</i>	after Peter Good
<i>Goodyera</i>	after John Goodyer, British botanist
<i>Gordonia</i>	after James Gordon, English nurseryman
<i>Gossypium</i>	ancient name of cotton plant

(To be continued)

Leaf feed and Root feed

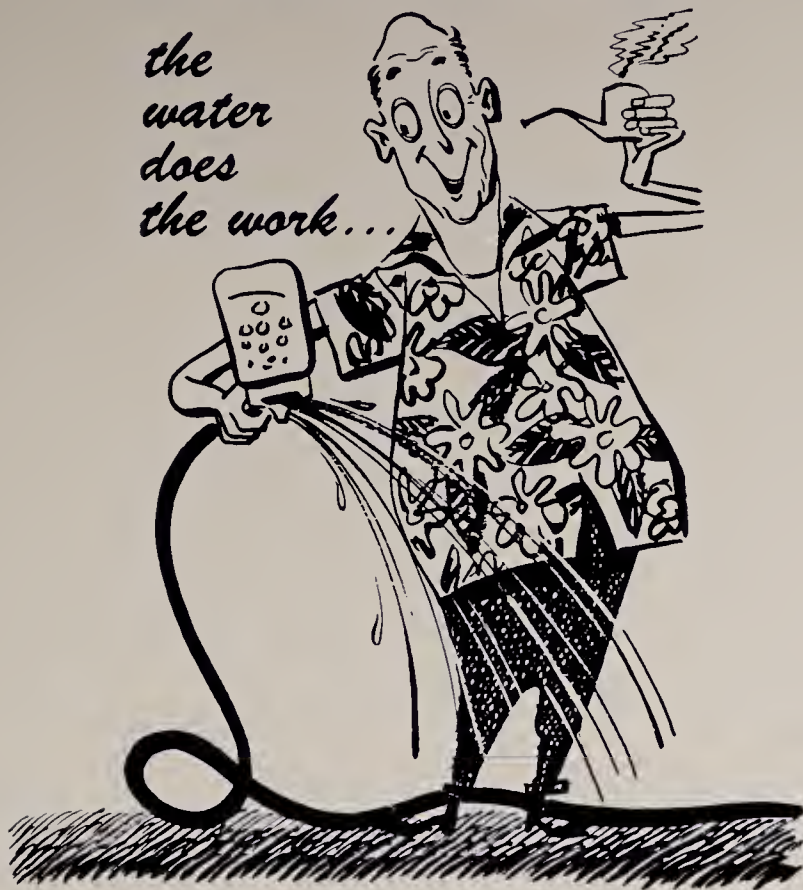
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